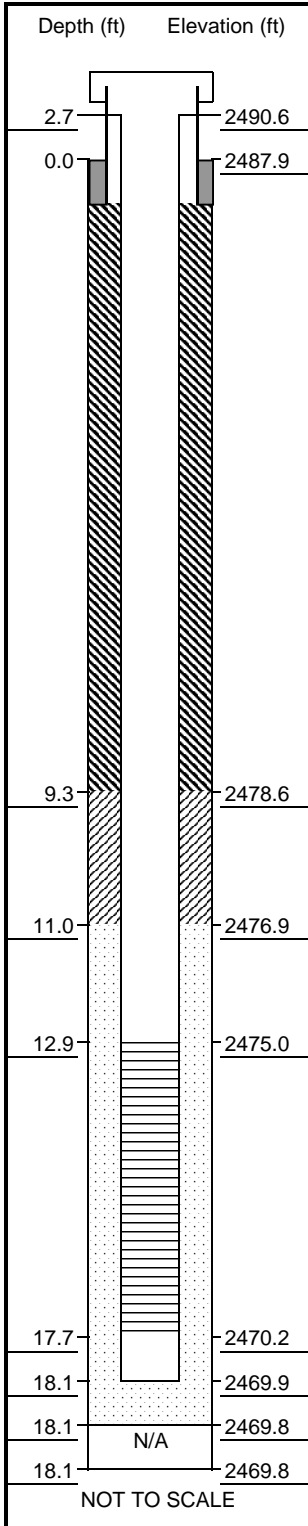


MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 447703.4
 E: 1364195.3

Well No.: SHMW-01A
Boring No. X-Ref: SHMW-01
Elevation Ground Level: 2487.9 ft
Top of Casing: 2490.6 ft

Drilling Summary

Total Depth: 18.1 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.66 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None
Protective Casing: 7 ft long, 6-inch dia. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/7/07	14:30	5/7/07	15:15
PVC	5/7/07	15:15	5/7/07	15:20
Sand Pack	5/7/07	15:35	5/7/07	15:41
Bent. Seal	5/7/07	15:41	5/7/07	15:55
Pro. Casing	5/7/07	15:55	5/7/07	16:00

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.7 - 12.9	C1	2485.2 - 2475.0
12.9 - 17.7	S1	2475.0 - 2470.2
17.7 - 18.1	C2	2470.2 - 2469.9
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 16.05 ft final: 19.22 ft
 Well developed with a bailer on 5/22/07

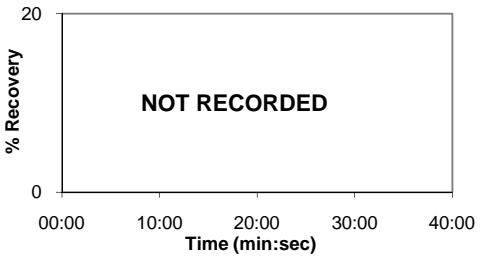
Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
threaded cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____
Sand Pack: 11.0 to 18.1 feet
45/55 Red Flint Sand
Grout Seal: 1 to 9.3 feet
Puregold Medium Chips (hydrated)
Bentonite Seal: 9.3 to 11.0 feet
Puregold Medium Chips (hydrated)

Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1004	6.34	1.96 mS/cm	7.4
1035	6.29	1.84	7.4
1339	6.34	1.87	7.7

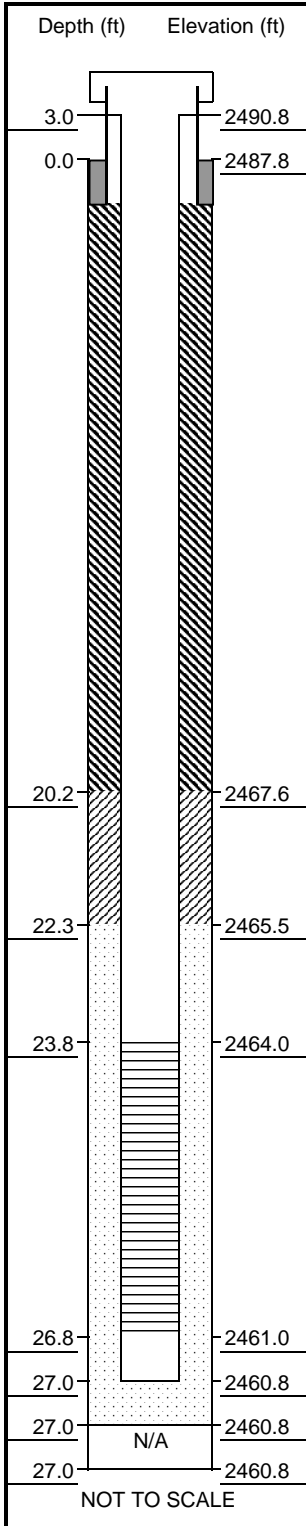
Recovery Data

Approx. Q = 0.021 gal/min
 Approx. s = 3.17 ft



Comments Puregold bentonite chips (bentonite seal) placed from 9.3 to 11.0 feet were hydrated with water before placing additional chips to near the ground surface.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 447701.3
 E: 1364200.0

Well No.: SHMW-01S
Boring No. X-Ref: SHMW-01
Elevation Ground Level: 2487.8 ft
Top of Casing: 2490.8 ft

Drilling Summary

Total Depth: 27.0 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.98 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None
Protective Casing: 7 ft long, 6-inch dia. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/7/07	9:32	5/7/07	11:15
PVC	5/7/07	11:30	5/7/07	11:33
Sand Pack	5/7/07	11:33	5/7/07	13:11
Bent. Seal	5/7/07	13:11	5/7/07	13:48
Pro. Casing	5/7/07	14:15	5/7/07	14:25

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+3.0 - 23.8	C1	2484.8 - 2464.0
23.8 - 26.8	S1	2464.0 - 2461.0
26.8 - 27.0	C2	2461.0 - 2460.8
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 14.96 ft final: 15.21 ft
 Well developed with a pump on 5/18/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
slip cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

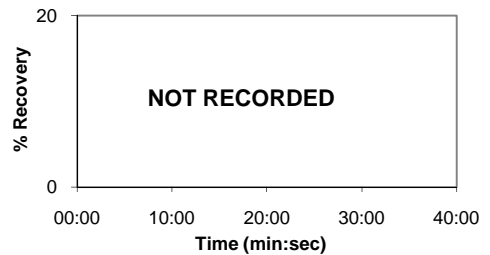
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
0854	6.51	1.21 mS/cm	10.0
0908	6.42	1.23	9.9
0916	6.39	1.28	10.2
0926	6.39	1.27	9.7
0934	6.31	1.28	9.6

Sand Pack: 22.3 to 27.0 feet
45/55 Red Flint Sand

Recovery Data

Approx. Q = 0.75 gal/min
 Approx. s = 0.25 ft

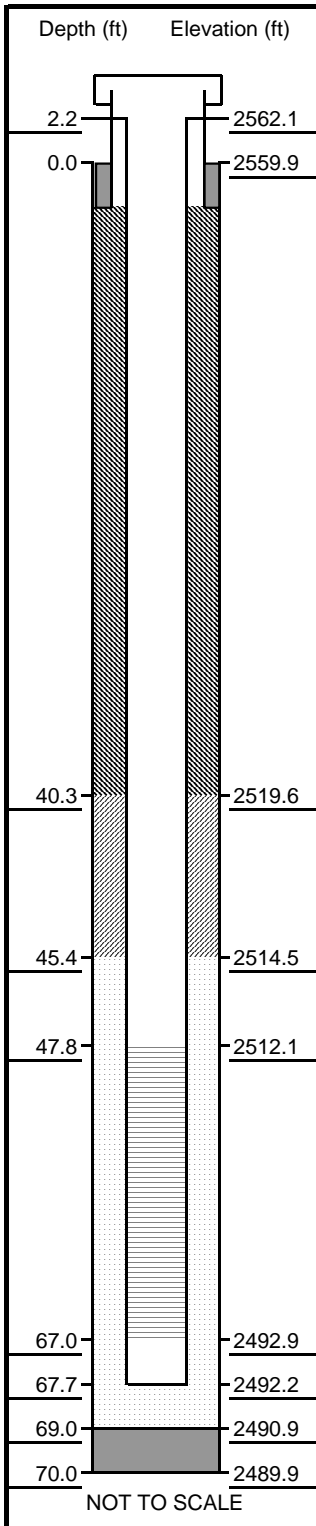


Grout Seal: 1 to 20.2 feet
CETCO Volclay Grout 20% solids

Bentonite Seal: 20.2 to 22.3 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 20.2 to 22.3 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 446330.2
 E: 1353960.6

Well No. SHMW-02C
Boring No. X-Ref: SHMW-02
 Elevation Ground Level 2559.9 ft
 Top of Casing 2562.1 ft

Drilling Summary

Total Depth: 70.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.2 ft
 Driller: BOART LONGYEAR
(ALVIN ANDERSON)
 Rig: GP24-300RS Rotosonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~800 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/16			
PVC	10/16	1204		
Sand Pack	10/16	1250		
Bentonite Seal	10/16	1305		
Grout	10/16	1335		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.2 - 47.8	C1	2557.7 - 2512.1
47.8 - 67.0	S1	2512.1 - 2492.9
67.0 - 67.2	C2	2492.9 - 2492.7
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 56.43 ft final: 67.6 ft
 Well developed with a bailer from _____
11/3/06 to 11/20/06

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine
slot (0.010-slot)
 S2 _____

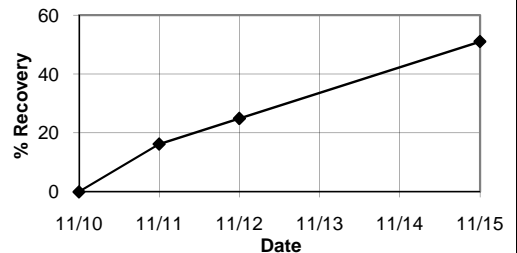
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1435	7.70	6.23 mS/cm	8.8
1705	7.70	6.52	9.4
850	8.09	5.89	6.4
902	7.95	6.04	8.8
915	7.95	5.85	9.3

Sand Pack: 45.4 to 69.0 feet
10/20 (American #40)

Recovery Data

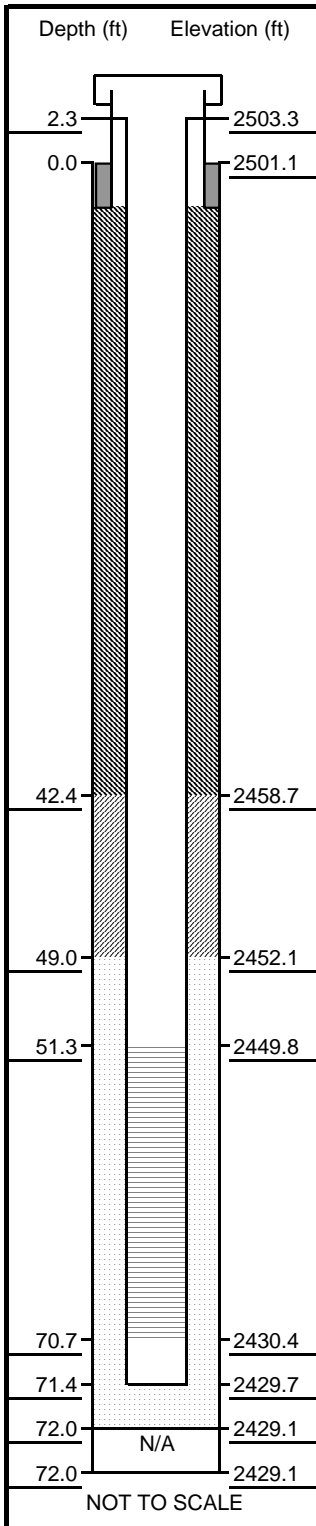
Approx. Q = 0.1 gal/min
 Approx. s = 4.5 ft



Grout Seal: 0 to 40.3 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)
Bentonite Seal: 40.3 to 45.4 feet
Puregold Medium Chips (hydrated)

Comments: Borehole drilled to approx. 70 ft. bgs; backfilled to 69 ft. bgs using hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 445913.3
 E: 1369619.5

Well No. SHMW-03C
Boring No. X-Ref: SHMW-03
 Elevation Ground Level 2501.1 ft
 Top of Casing 2503.3 ft

Drilling Summary

Total Depth: 72.0 ft
 Borehole Diameter: 8.0 in
 Casing Stickup Height: 2.3 ft
 Driller: BOART LONGYEAR (TOM DEVICK)
 Rig: RD-300RS Rotosonic
 Bits(s): 8-INCH
 Drilling Fluid: water (~500 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/18			
PVC	10/18	1341		
Sand Pack	10/18	1451		
Bent. Seal	10/18	1507		
Grout	10/18	1610		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 51.3	C1	2498.8 - 2449.8
51.3 - 70.7	S1	2449.8 - 2430.4
70.7 - 71.0	C2	2430.4 - 2430.1
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 30.24 ft final: 62.9 ft
 Well developed with a bailer and pump on 11/16/07.

Casing: C1 4-inch sch. 40 PVC riser
 C2 4-inch sch. 40 PVC flat bottom cap (0.48 ft.)
Screen: S1 4-inch sch. 40 PVC machine slot (0.020-slot)
 S2 _____

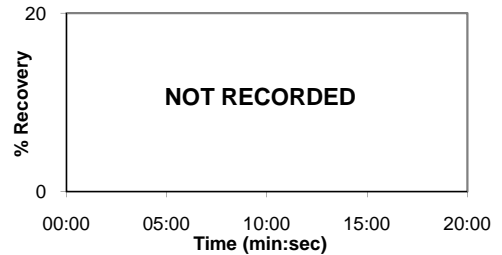
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1614	7.52	0.935 mS/cm	9.3
1617	7.52	1.079	9.3
1620	7.51	1.067	9.3
1624	7.51	1.067	9.3
1627	7.49	1.082	9.3

Sand Pack: 49.0 to 72.0 feet
10/20 (American #40)

Recovery Data

Approx. Q = 6 gal/min
 Approx. s = 32 ft

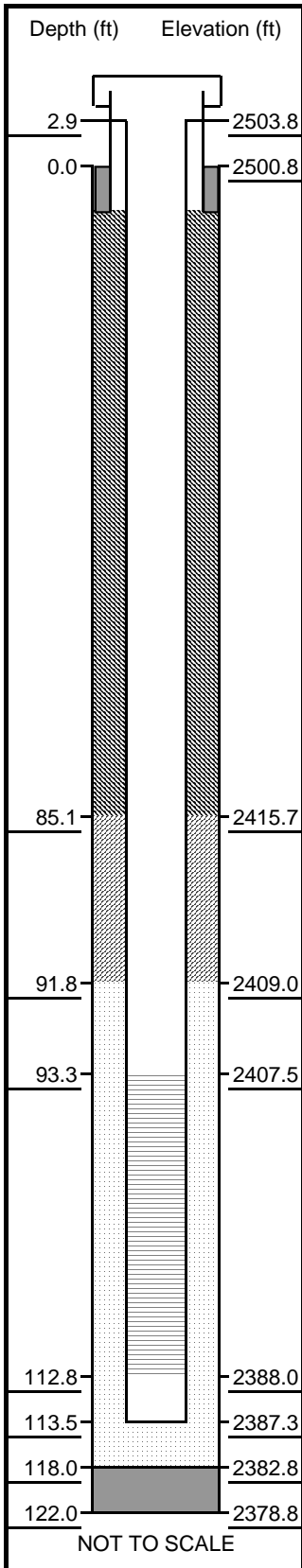


Grout Seal: 0 to 42.4 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 42.4 to 49.0 feet
Puregold Medium Chips (hydrated)

Comments N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 445929.7
 E: 1369603.3

Well No. SHMW-03D
Boring No. X-Ref: SHMW-03
 Elevation Ground Level: 2500.8 ft
 Top of Casing: 2503.8 ft

Drilling Summary

Total Depth: 122.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.9 ft
 Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~1200 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/15			
PVC	10/15	1505		
Sand Pack	10/15	1540		
Bent. Seal	10/15	1555		
Grout	10/15	1700		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.9 - 93.3	C1	2497.9 - 2407.5
93.3 - 112.8	S1	2407.5 - 2388.0
112.8 - 113.0	C2	2388.0 - 2387.8
-		-
-		-
-		-

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.010-slot)
 S2 _____

Sand Pack: 91.8 to 118.0 feet
 10/20 (American #40)

Grout Seal: 0 to 85.1 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 85.1 to 91.8 feet
 Puregold Medium Chips (hydrated)

Well Development

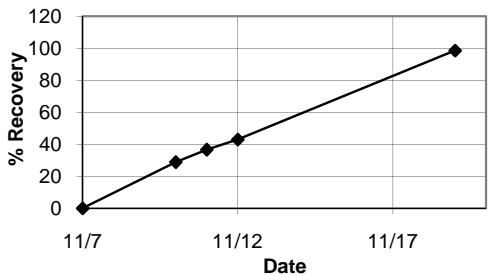
Depth to water initial: 90 ft final: 114.3 ft
 Well developed with a bailer and pump on 11/4/06, 11/7/06, and 11/19/06.

Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
945	8.03	1.472 mS/cm	9.2
955	8.08	1.614	9.6
1010	8.11	1.631	9.5
1025	8.08	1.582	9.5

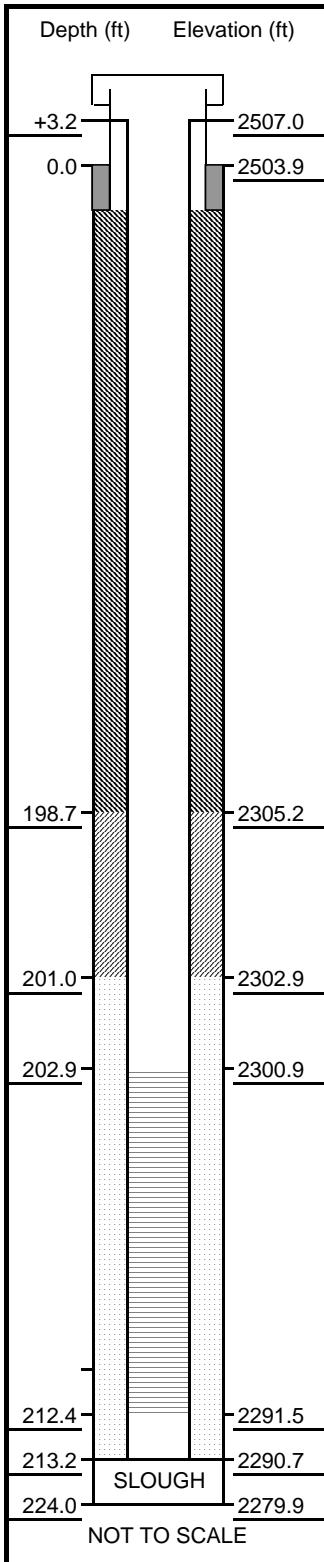
Recovery Data

Approx. Q = BAIL gal/min
 Approx. s = ft



Comments: Borehole backfilled from 122 to 118 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart Lignite Mine
Project Number: 063-2212D
 Survey Coordinates: E: 1369634.94
 SP27 N: 445863.55

Well No. SHMW-03HTB
Boring No. X-Ref: SHMW-03HTB
 Elevation Ground Level: 2503.86 ft
 Elevation Top of Casing: 2507.03 ft

Drilling Summary
 Total Depth: 224.0 ft
 Borehole Diameter: 8.0 in
 Casing Stickup Height: 3.17 ft
 Driller: Braun Intertec: Kyle Haag
 Rig: CME-75
 Bit(s): 3.75-inch TCP HQ-coring bit, 5-inch and 8-inch rotary bits
 Drilling Fluid: SW Pipeline Water and Mud (Cetco Super Gel-X Extra High Yield Bentonite)
 Protective Casing: Steel, 6-inch square

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/19	1052	10/21	1350
Reaming	10/22	0815	10/22	1615
Well Install:				
PVC	10/23	1305	10/23	1400
Sand Pack	10/23	1501	10/23	1610
Bentonite Seal	10/23	1614	10/23	1746
Grout	10/24	0817	10/24	1000
Surface Compl.	10/28	0830	10/28	1000

* Dates are 2009

Well Design and Specifications

Basis: _____
 Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+3.2 - 202.9	C1	2507.0 - 2300.9
202.9 - 212.4	S1	2300.9 - 2291.5
212.4 - 213.2	C2	2291.5 - 2290.7
-	-	-
-	-	-
-	-	-

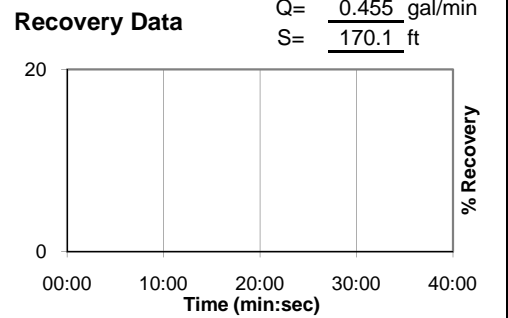
Well Development
 Depth to water initial: 21.10 final: 191.21
 Developed using Grundfos Redi-Flow 3 pump on 11/02/09. Removed a total of 135 gallons.

Casing: C1 4-inch Schedule 80 PVC Riser
 C2 4-inch Schedule 80 PVC Flush-threaded end cap
Screen: S1 4-inch Schedule 80 PVC 0.010-inch machine slotted
 S2

Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1205	9.14	1753	10.94
1300	8.98	1869	11.52
1400	8.69	2099	12.78
1455	8.78	2018	12.66

Sand Pack: 0.45 - 0.55 E.S. Red Flint Sand (201.0 - 213.2 ft)



Grout Seal: Cetco High-Solids Granular Bentonite Grout (0 - 198.7 ft)

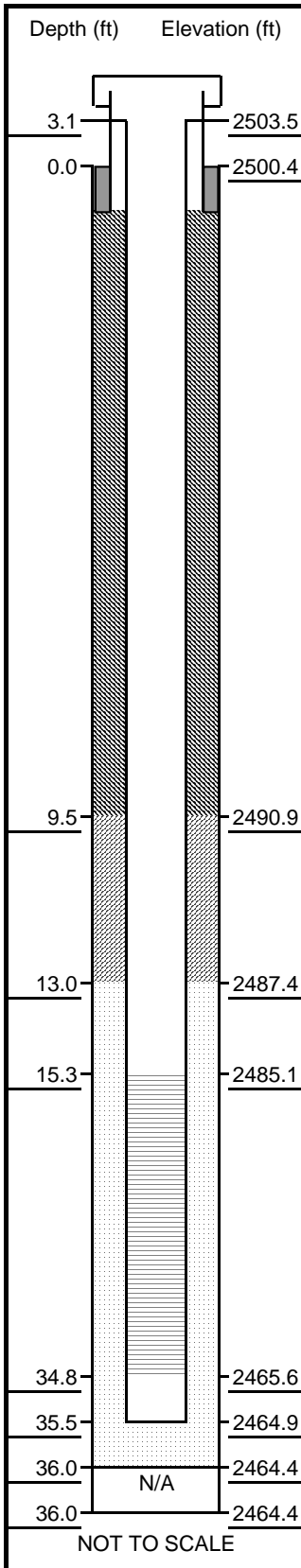
Bentonite Seal: Cetco Volclay/PureGold 1/4-inch Bentonite Tablets (198.7 - 201.0 ft)

Comments Drilled TD = 224 ft (HQ-coring), Reamed TD = 214 ft (8" rotary bit), Sloughed TD = 213.2 ft. Lost ~6" short piece of steel pipe in borehole. Some sloughing approximately from 165 to 198.7 feet and from 213.2 to 224 feet. Stainless steel centralizer placed at 202 ft. Sand, bentonite tablets, and grout placed by tremie pipe.

Supervised by: Ryan Tolene

Date: 10/23/2009

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 445929.9
 E: 1369585.2

Well No. SHMW-03S
Boring No. X-Ref: SHMW-03
 Elevation Ground Level: 2500.4 ft
 Top of Casing: 2503.5 ft

Drilling Summary

Total Depth: 36.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 3.1 ft
 Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~120 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/28			
PVC	10/28	1615		
Sand Pack	10/28	1650		
Bent. Seal	10/28	1700		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+3.1 - 15.3	C1	2497.3 - 2485.1
15.3 - 34.8	S1	2485.1 - 2465.6
34.8 - 35.0	C2	2465.6 - 2465.4
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 29.92 ft final: 30.2 ft
 Well developed with a bailer and pump on 11/4/06 and 11/7/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.010-slot)
 S2 _____

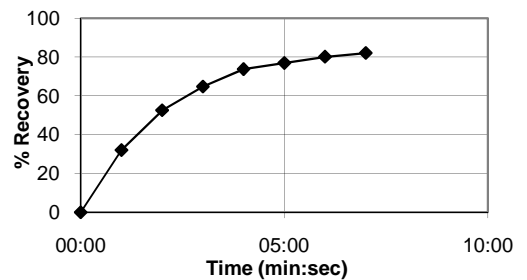
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1313	7.69	0.733 mS/cm	12
1328	7.69	0.734	12.2
1343	7.69	0.733	12.1
1358	7.7	0.737	12.2
1413	7.68	0.732	12.2

Sand Pack: 13.0 to 36.0 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 1 gal/min
 Approx. s = 2 ft

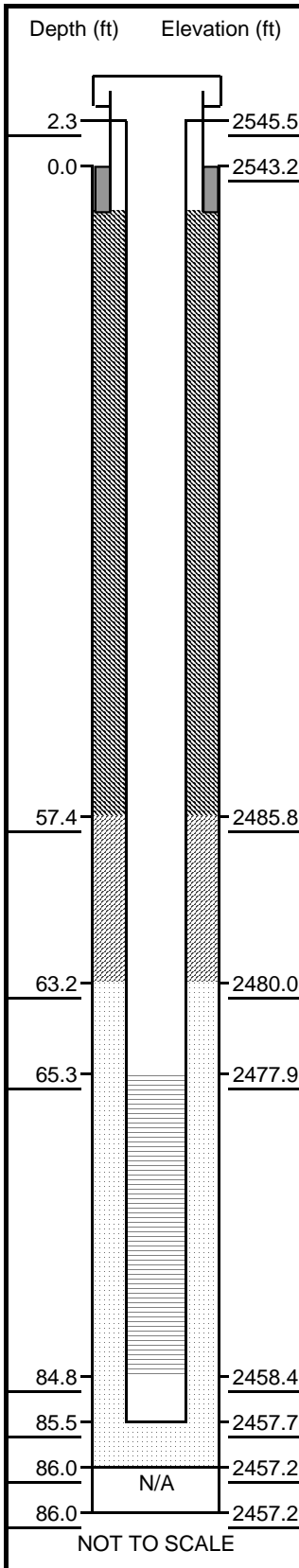


Grout Seal: 0 to 9.5 feet
 Bentonite clay chips (hydrated)

Bentonite Seal: 9.5 to 13.0 feet
 Puregold Medium Chips (hydrated)

Comments: One centralizer used in well installation.
 N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 443827.3
 E: 1366819.7

Well No. SHMW-04C
Boring No. X-Ref: SHMW-04
Elevation Ground Level: 2543.2 ft
Top of Casing: 2545.5 ft

Drilling Summary

Total Depth: 86.0 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 2.3 ft
Driller: BOART LONGYEAR
 (MIKE CZECH)
Rig: RD 300RS Rotasonic
Bits(s): 6-INCH
Drilling Fluid: water (~500 gals.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/20			
PVC	10/20	1031		
Sand Pack	10/20	1130		
Bent. Seal	10/20	1147		
Grout	10/20	1305		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 65.3	C1	2540.9 - 2477.9
65.3 - 84.8	S1	2477.9 - 2458.4
84.8 - 85.0	C2	2458.4 - 2458.2
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 71.52 ft **final:** 75.6 ft
 Well developed with a bailer and pump on 11/1/06 and 11/2/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.10-slot)
 S2 _____

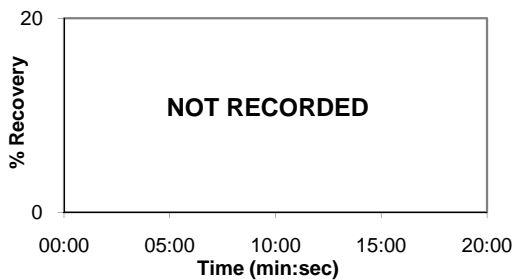
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
908	7.39	5.03 mS/cm	9.8
946	7.42	5.18	9.7
1013	7.27	5.34	9.9
1025	7.29	5.32	9.9
1037	7.3	5.30	9.9

Sand Pack: 63.2 to 86.0 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 2.5 gal/min
 Approx. s = 0.2 ft

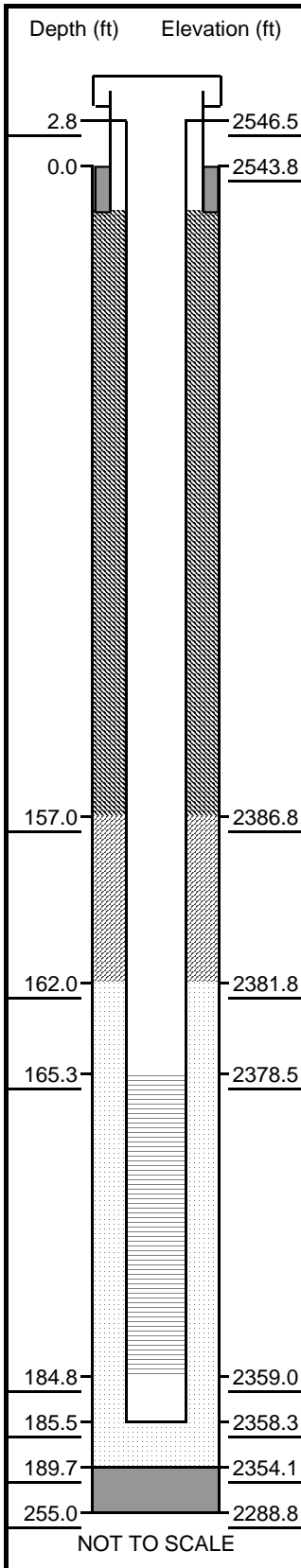


Grout Seal: 0 to 57.4 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 57.4 to 63.2 feet
 Puregold Medium Chips (hydrated)

Comments N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 443811.5
 E: 1366818.2

Well No. SHMW-04D
Boring No. X-Ref: SHMW-04
 Elevation Ground Level 2543.8 ft
 Top of Casing 2546.5 ft

Drilling Summary

Total Depth: 255.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.8 ft
 Driller: BOART LONGYEAR
(ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~100 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	9/26			
PVC	9/28	1645		
Sand Pack	9/28	1825		
Bent. Seal	9/28	1830		
Grout	9/29	0850		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 165.3	C1	2541.0 - 2378.5
165.3 - 184.8	S1	2378.5 - 2359.0
184.8 - 185.0	C2	2359.0 - 2358.8
-		-
-		-
-		-

Well Development

Depth to water initial: 57.52 ft final: 84.19 ft
 Well developed with a bailer and pump on
10/31/06 and 11/1/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
sandpoint cap (0.5 ft.)
Screen: S1 2-inch sch. 40 PVC machine
slot (0.010-slot)
 S2 _____

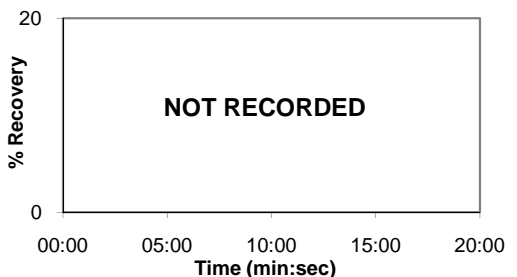
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1225	8.64	1.664 mS/cm	9.9
1315	8.62	1.649	9.6
1405	8.70	1.634	9.3
1440	8.60	1.658	9.5
1505	8.64	1.637	9.3

Sand Pack: 162.0 to 189.7 feet
10/20 (American #40)

Recovery Data

Approx. Q = 2 gal/min
 Approx. s = 2 ft

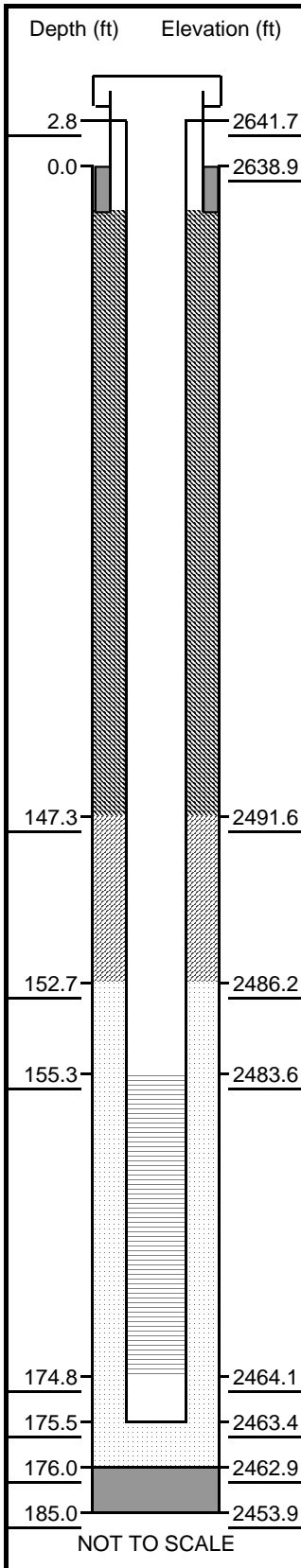


Grout Seal: 0 to 157.0 feet
Bentonite clay grout
(1.5 lbs Bentonite to 1 gallon water)

Bentonite Seal: 157.0 to 162.0 feet
Puregold Medium Chips (hydrated)

Comments: Borehole backfilled from 255 to 189.7 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 441225.5
 E: 1353781.8

Well No. SHMW-05C
Boring No. X-Ref: SHMW-05
 Elevation Ground Level 2638.9 ft
 Top of Casing 2641.7 ft

Drilling Summary

Total Depth: 185.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.8 ft
 Driller: BOART LONGYEAR
(ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~600 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/19			
PVC	10/19	1440		
Sand Pack	10/19	1600		
Bent. Seal	10/19	1630		
Grout	10/20	0805		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 155.3	C1	2636.1 - 2483.6
155.3 - 174.8	S1	2483.6 - 2464.1
174.8 - 175.0	C2	2464.1 - 2463.8
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 132.62 ft final: 132.81 ft
 Well developed with a bailer and pump on 11/5/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.010-slot)
 S2 _____

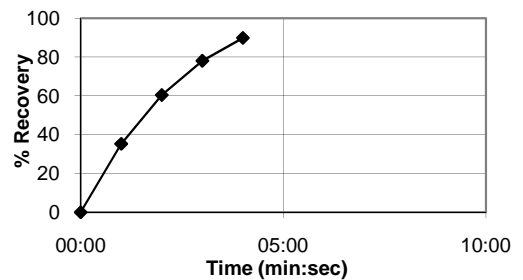
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1643	7.41	2.56 mS/cm	12.4
1724	7.37	2.63	12.3
1728	7.38	2.65	12.4
1733	7.31	2.64	12.4

Sand Pack: 152.7 to 176.0 feet
10/20 (American #40)

Recovery Data

Approx. Q = 0.8 gal/min
 Approx. s = 26 ft

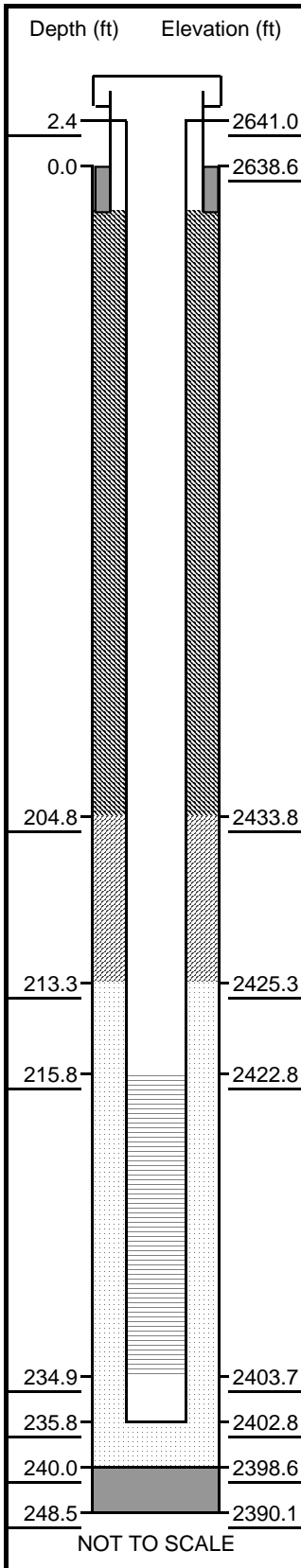


Grout Seal: 0 to 147.3 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 147.3 to 152.7 feet
Puregold Medium Chips (hydrated)

Comments: Air-rotary drilled to approx. 185 ft. bgs; backfilled to 176 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 441205.9
 E: 1353789.1

Well No. SHMW-05D
Boring No. X-Ref: SHMW-05
Elevation Ground Level: 2638.6 ft
Top of Casing: 2641.0 ft

Drilling Summary

Total Depth: 248.5 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 2.4 ft
Driller: BOART LONGYEAR
(TOM DEVICK)
Rig: RD-300RS Rotosonic
Bits(s): 6-INCH
Drilling Fluid: water (~1100 gals.)
(Removed by air lifting before well inst.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	9/30			
PVC	10/4	1600		
Sand Pack	10/4	1810		
Bent. Seal	10/4	1845		
Grout	10/5	0832		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.4 - 215.8	C1	2636.2 - 2422.8
215.8 - 234.9	S1	2422.8 - 2403.7
234.9 - 235.5	C2	2403.7 - 2403.1
-		-
-		-
-		-

Well Development

Depth to water initial: 132.22 ft **final:** 158 ft
 Well developed with a bailer and pump on
11/8/06 and 11/13/06.

Casing: C1 2-inch sch. 80 PVC riser
 C2 2-inch sch. 80 PVC
flat bottom cap (0.3- ft.)
Screen: S1 2-inch sch. 80 PVC machine
slot (0.010-slot)
 S2 _____

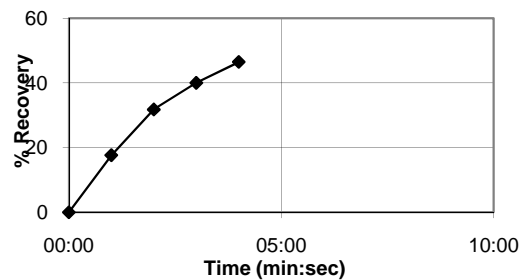
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
0842	8.74	2.24 mS/cm	10.2
0920	8.65	2.21	10.5
0958	8.71	2.25	11
1036	8.64	2.25	11.4
1105	8.64	2.25	10.7

Sand Pack: 213.3 to 240.0 feet
10/20 (American #40)

Recovery Data

Approx. Q = 1.6 gal/min
 Approx. s = 23 ft

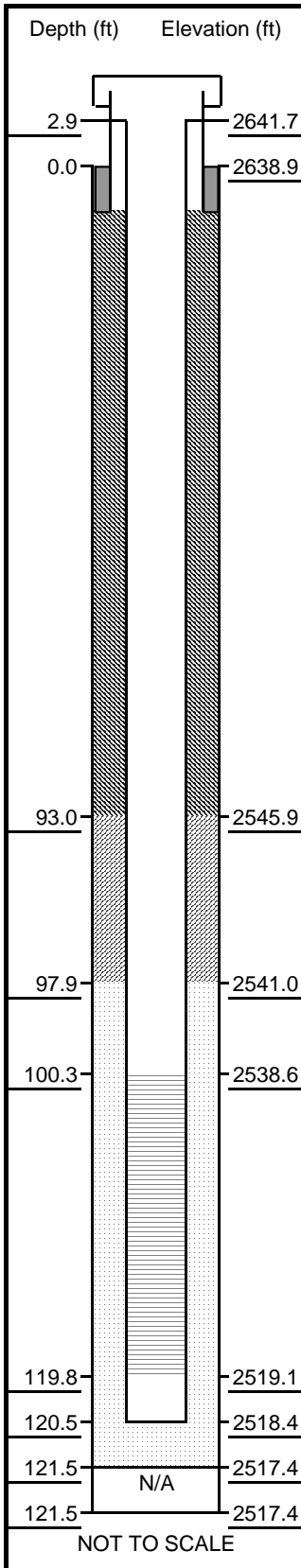


Grout Seal: 0 to 204.8 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 204.8 to 213.3 feet
Puregold Medium Chips (hydrated)

Comments Borehole drilled to approx. 248.5 ft. bgs; backfilled to 240 ft. bgs with hydrated bentonite chips.
One casing volume of water added during well installation; came out of borehole during grouting.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 441213.1
 E: 1353774.8

Well No. SHMW-05S
Boring No. X-Ref: SHMW-05
 Elevation Ground Level: 2638.9 ft
 Top of Casing: 2641.7 ft

Drilling Summary

Total Depth: 121.5 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.9 ft
 Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: None (See Comments)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/29			
PVC	10/29	1545		
Sand Pack	10/29	1610		
Bent. Seal	10/29	1615		
Grout	10/29	1645		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.9 - 100.3	C1	2636.0 - 2538.6
100.3 - 119.8	S1	2538.6 - 2519.1
119.8 - 120.0	C2	2519.1 - 2518.9
-		-
-		-
-		-

Well Development

Depth to water initial: 122.92 ft final: 123.33 ft
 Well developed with a bailer on 11/5/06,
 11/7/06, 11/10/06, 11/11/06, and 11/12/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
 sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine
 slot (0.010-slot)
 S2 _____

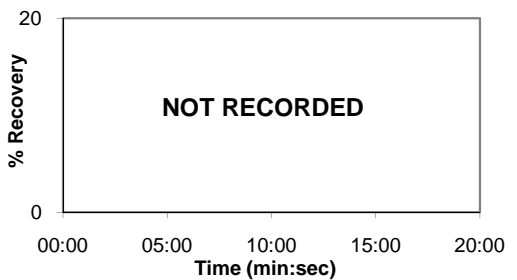
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)

Sand Pack: 97.9 to 121.5 feet
 10/20 (American #40)

Recovery Data

Approx. Q = NA gal/min
 Approx. s = NA ft



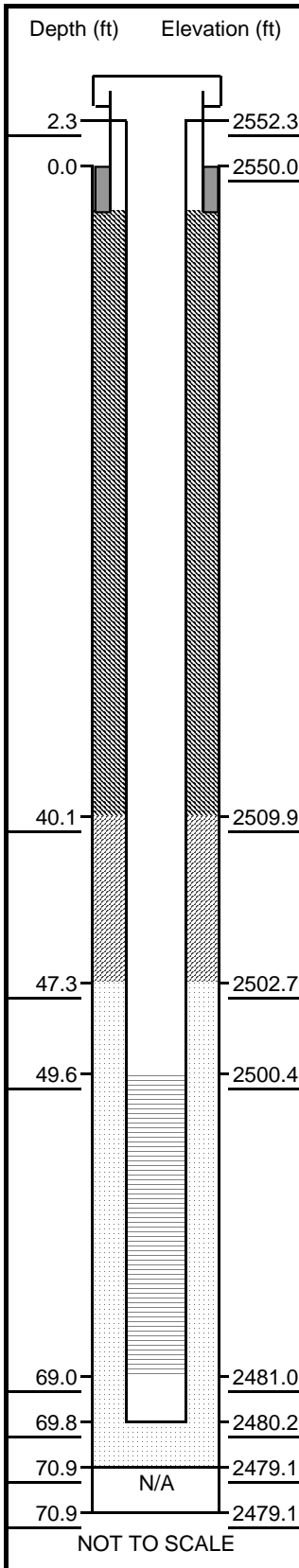
Grout Seal: 0 to 93.0 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 93.0 to 97.9 feet
 Puregold Medium Chips (hydrated)

Comments: No drill water used during air-drilling; 2-centralizers used in well installation. 10-20 gallons of water added during well installation. N/A indicates not applicable.

DRY HOLE

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 438866.2
 E: 1364183.0

Well No. SHMW-06C
Boring No. X-Ref: SHMW-06
Elevation Ground Level: 2550.0 ft
Top of Casing: 2552.3 ft

Drilling Summary

Total Depth: 70.9 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 2.3 ft
Driller: BOART LONGYEAR
 (TOM DEVICK)
Rig: RD-300RS Rotosonic
Bits(s): 6-INCH
Drilling Fluid: water (~500 gals.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/19			
PVC	10/19	1214		
Sand Pack	10/19	1335		
Bent. Seal	10/19	1345		
Grout	10/19	1502		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 49.6	C1	2547.7 - 2500.4
49.6 - 69.0	S1	2500.4 - 2481.0
69.0 - 69.3	C2	2481.0 - 2480.7
-		-
-		-
-		-

Well Development

Depth to water initial: 64.42 ft **final:** 69.04 ft
 Well developed with a pump and bailer on 11/2/06 and 11/3/06

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.49 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.010-slot)
 S2 _____

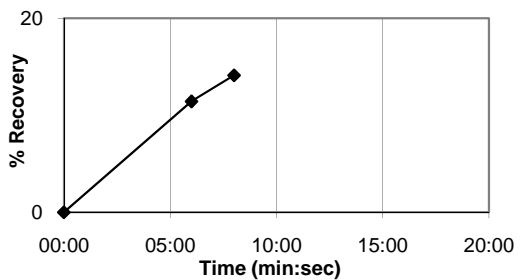
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
0928	6.64	8.86 mS/cm	7.9
1015	6.66	8.79	7.7
1515	6.61	8.65	8.7
1530	6.57	8.86	8.8

Sand Pack: 47.3 to 70.9 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 0.04 gal/min
 Approx. s = 1.6 ft

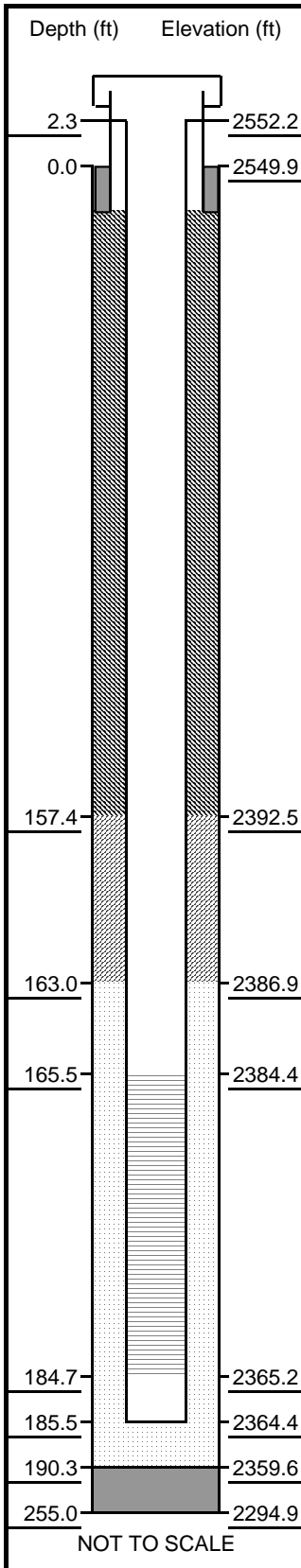


Grout Seal: 0 to 40.1 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 40.1 to 47.3 feet
 Puregold Medium Chips (hydrated)

Comments N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 438876.5
 E: 1364183.6

Well No. SHMW-06D
Boring No. X-Ref: SHMW-06
 Elevation Ground Level 2549.9 ft
 Top of Casing 2552.2 ft

Drilling Summary

Total Depth: 255.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.3 ft
 Driller: BOART LONGYEAR
(TOM DEVICK)
 Rig: RD-300RS Rotosonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~1100 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	9/26			
PVC	9/30	0815		
Sand Pack	9/30	0930		
Bent. Seal	9/30	0945		
Grout	9/30	1110		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 165.5	C1	2547.6 - 2384.4
165.5 - 184.7	S1	2384.4 - 2365.2
184.7 - 185.0	C2	2365.2 - 2364.9
-		-
-		-
-		-

Well Development

Depth to water initial: 53.73 ft final: 78.8 ft
 Well developed with a bailer and pump on
11/2/06 and 11/3/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
sandpoint cap (0.49 ft.)
Screen: S1 2-inch sch. 40 PVC machine
slot (0.010-slot)
 S2 _____

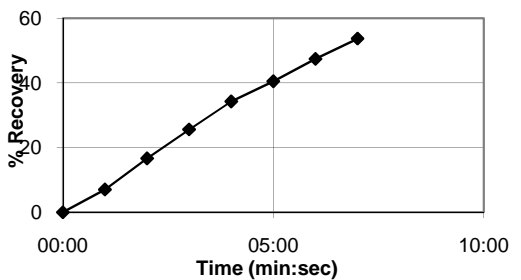
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
0910	8.34	2.31 mS/cm	7.1
1007	8.30	2.37	9.4
1142	8.35	2.38	8.8
1338	8.27	2.22	10.6
1552	8.34	2.34	10.4

Sand Pack: 163.0 to 190.3 feet
10/20 (American #40)

Recovery Data

Approx. Q = 0.6 gal/min
 Approx. s = 117 ft

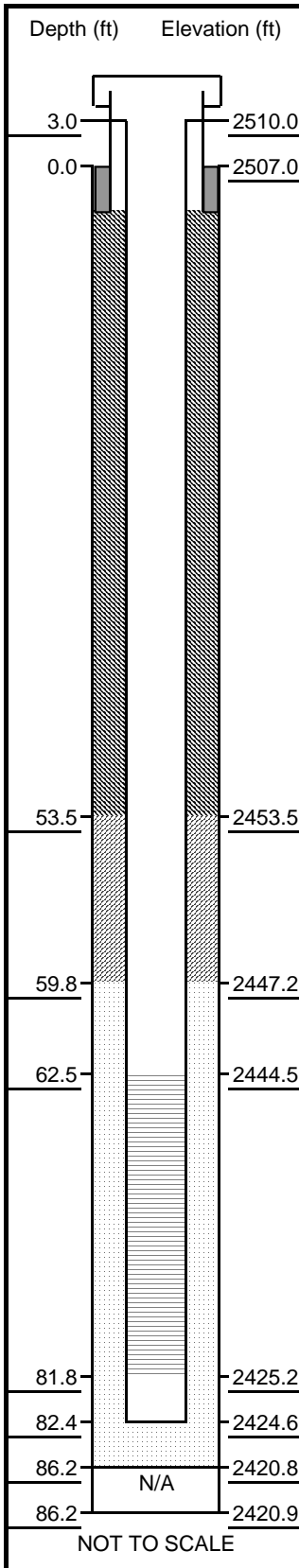


Grout Seal: 0 to 157.4 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 157.4 to 163.0 feet
Puregold Medium Chips (hydrated)

Comments Borehole backfilled from 252 to 190.3 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 437911.8
 E: 1375266.4

Well No. SHMW-07C
Boring No. X-Ref: SHMW-07
Elevation Ground Level: 2507.0 ft
Top of Casing: 2510.0 ft

Drilling Summary

Total Depth: 86.2 ft
Borehole Diameter: 8.0 in
Casing Stickup Height: 3.0 ft
Driller: BOART LONGYEAR
 (TOM DEVICK)
Rig: RD-300RS Rotosonic
Bits(s): 8-INCH
Drilling Fluid: water (~1000 gals.)
Protective Casing: 5-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/11			
PVC	10/12	1105		
Sand Pack	10/12	1217		
Bent. Seal	10/12	1235		
Grout	10/12	1421		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+3.0 - 62.5	C1	2504.0 - 2444.5
62.5 - 81.8	S1	2444.5 - 2425.2
81.8 - 82.0	C2	2425.2 - 2425.0
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 28.17 ft **final:** 65.7 ft
 Well developed with a bailer and pump on 11/14/06 and 11/15/06.

Casing: C1 4-inch sch. 40 PVC riser
 C2 4-inch sch. 40 PVC
 flat bottom cap (0.39 ft.)
Screen: S1 4-inch sch. 40 PVC machine
 slot (0.020-slot)
 S2 _____

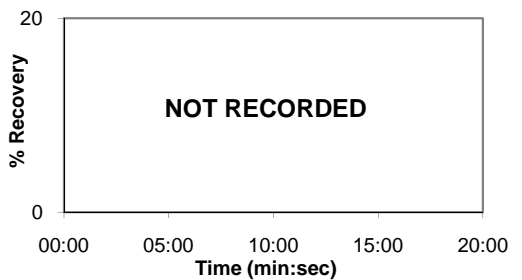
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1535	7.71	3.72 mS/cm	11.1
1633	7.66	3.73	11.1
1640	7.62	3.73	10.4

Sand Pack: 59.8 to 86.2 feet
 10/20 (American #40)
 (backfill also)

Recovery Data

Approx. Q = 2 gal/min
 Approx. s = NR ft

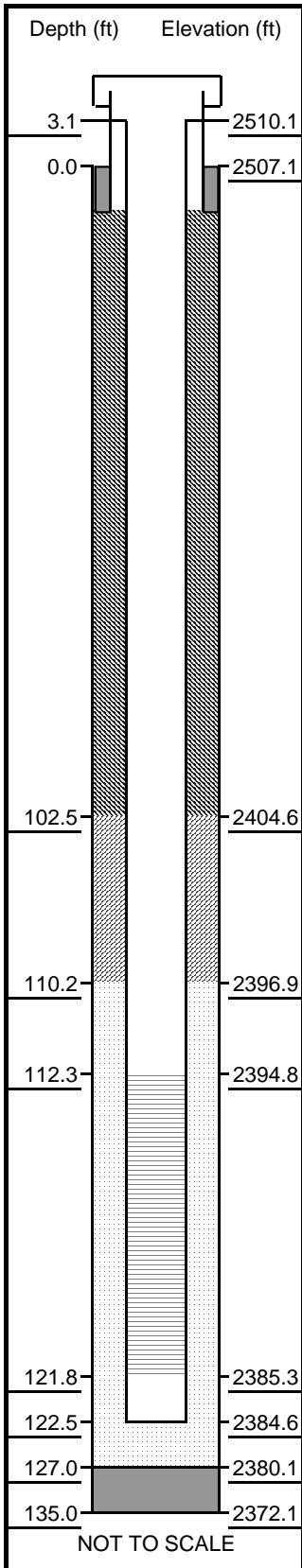


Grout Seal: 0 to 53.5 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 53.5 to 59.8 feet
 Puregold Medium Chips (hydrated)

Comments Borehole drilled to approx. 86.17 ft. bgs; backfilled to 82.39 ft. bgs using sand pack (quantity included in sand pack quantity). One borehole volume of drill water removed by positive displacement during well installation. N/A indicates not applicable. NR indicates not recorded.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 437912.3
 E: 1375290.1

Well No. SHMW-07D
Boring No. X-Ref: SHMW-07
Elevation Ground Level: 2507.1 ft
Top of Casing: 2510.1 ft

Drilling Summary

Total Depth: 135.0 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 3.1 ft
Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
Rig: GP24-300RS Rotosonic
Bits(s): 6 1/4-Inch Tri-Cone; 6-Inch RS
Drilling Fluid: water (~200 gals.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/16			
PVC	10/17	1350		
Sand Pack	10/17	1455		
Bent. Seal	10/17	1505		
Grout	10/17	1545		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+3.1 - 112.3	C1	2504.0 - 2394.8
112.3 - 121.8	S1	2394.8 - 2385.3
121.8 - 122.0	C2	2385.3 - 2385.0
-		-
-		-
-		-

Well Development

Depth to water initial: 65.04 ft **final:** 126.07 ft
 Well developed with a bailer and pump on 11/4/06, 11/6/06, 11/15/06, and 11/19/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.010-slot)
 S2 _____

Stabilization Test Data 11/15 and 11/19

Time	pH	Spec. Cond.	Temp (°C)
1605	8.26	1.697 mS/cm	8.2
1632	8.40	1.680	6.9
1109	8.29	1.761	9.7
1132	8.21	1.731	9.5

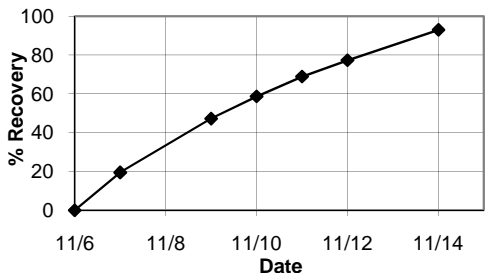
Sand Pack: 110.2 to 127.0 feet
 10/20 (American #40)

Grout Seal: 0 to 102.5 feet
 Bentonite Clay

Bentonite Seal: 102.5 to 110.2 feet
 Puregold Medium Chips (hydrated)

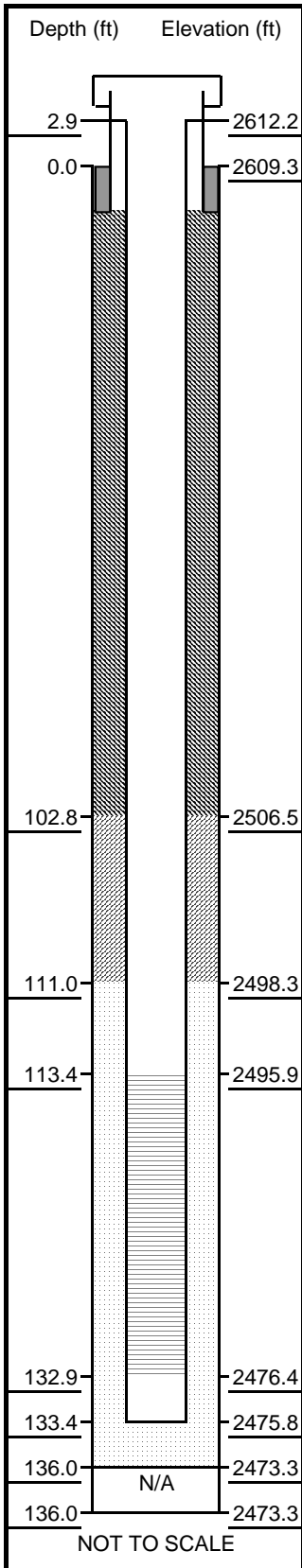
Recovery Data

Approx. Q = 0.15 gal/min
 Approx. s = 56 ft



Comments: Borehole Air-Rotary drilled from 0 to 85' bgs w/ 6 1/4-inch Tri-Cone bit; switched to 6-inch RotoSonic bit from 85 to 135' bgs. Borehole backfilled from 135 to 127 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 437809.1
 E: 1358949.0

Well No. SHMW-08C
Boring No. X-Ref: SHMW-08
Elevation Ground Level: 2609.3 ft
Top of Casing: 2612.2 ft

Drilling Summary

Total Depth: 136.0 ft
Borehole Diameter: 8.0 in
Casing Stickup Height: 2.9 ft
Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
Rig: GP24-300RS Rotasonic
Bits(s): 8-INCH
Drilling Fluid: water (~200 gals.)
 (~100 gals. added during well installation.)
Protective Casing: 5-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/26			
PVC	10/26	1350		
Sand Pack	10/26	1525		
Bent. Seal	10/26	1530		
Grout	10/26	1630		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+3.0 - 113.4	C1	2606.3 - 2495.9
113.4 - 132.9	S1	2495.9 - 2476.4
132.9 - 133.0	C2	2476.4 - 2476.2
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 117.76 ft **final:** 129.3 ft
 Well developed with a bailer on 11/14/06, 11/16/06, and 11/17/06.

Casing: C1 4-inch sch. 40 PVC riser
 C2 4-inch sch. 40 PVC
 flat bottom cap (0.40 ft.)
Screen: S1 4-inch sch. 40 PVC machine
 slot (0.020-slot)
 S2 _____

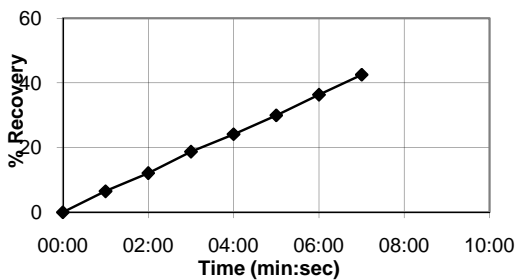
Stabilization Test Data 11/16 and 11/17

Time	pH	Spec. Cond.	Temp (°C)
1709	7.96	4.58 mS/cm	9.4
1713	7.95	4.42	9.5
0925	8.08	4.71	8.7
0934	8.03	4.65	9.2
0940	8.07	4.74	9.1

Sand Pack: 111.0 to 136.0 feet
 10/20 (American #40)

Recovery Data

Approx. Q= 1 gal/min
 Approx. s= 13 ft

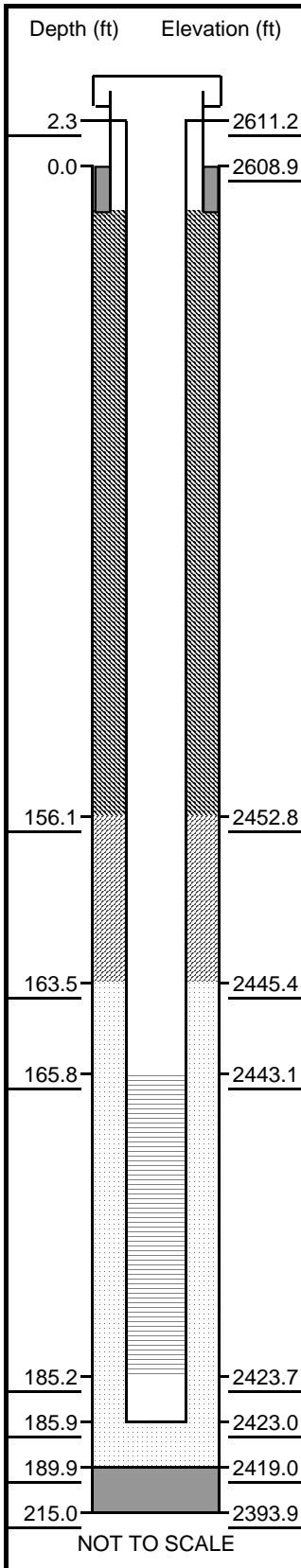


Grout Seal: 0 to 102.8 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 102.8 to 111.0 feet
 Puregold Medium Chips (hydrated)

Comments: N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 437790.5
 E: 1358944.4

Well No. SHMW-08D
Boring No. X-Ref: SHMW-08
 Elevation Ground Level: 2608.9 ft
 Top of Casing: 2611.2 ft

Drilling Summary

Total Depth: 215.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.3 ft
 Driller: BOART LONGYEAR
 (TOM DEVICK)
 Rig: RD-300RS Rotosonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~1000 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/15			
PVC	10/17	0925		
Sand Pack	10/17	1055		
Bent. Seal	10/17	1108		
Grout	10/17	1330		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 165.8	C1	2606.6 - 2443.1
165.8 - 185.2	S1	2443.1 - 2423.7
185.2 - 185.4	C2	2423.7 - 2423.5
-		-
-		-
-		-

Well Development

Depth to water initial: 107.05 ft final: 128.02 ft
 Well developed with a bailer and pump on 11/4/06 to 11/5/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.10-slot)
 S2 _____

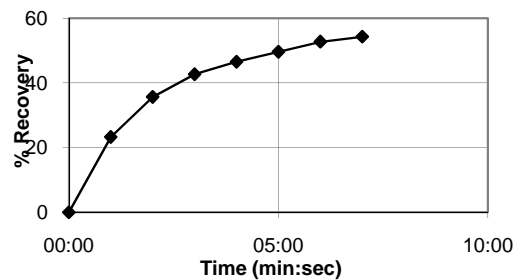
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1335	8.5	2.23 mS/cm	11.9
1415	8.52	2.22	11.7
1433	8.51	2.21	11.6
1451	8.52	2.21	11.5
1509	8.51	2.21	11.4

Sand Pack: 163.5 to 189.9 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 2.5 gal/min
 Approx. s = 1 ft

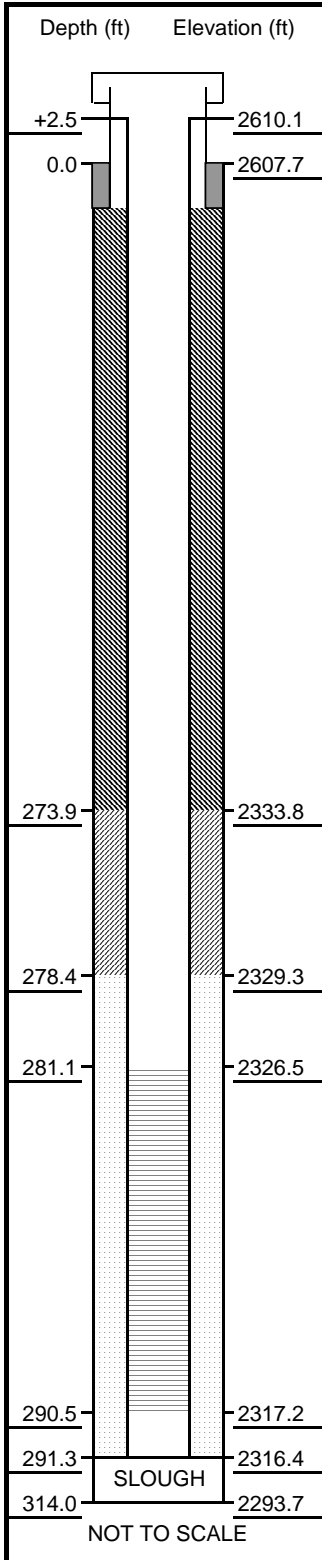


Grout Seal: 0 to 156.1 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 156.1 to 163.5 feet
 Puregold Medium Chips (hydrated)

Comments Borehole drilled to approx. 215 ft. bgs; backfilled to 189.9 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart Lignite Mine
Project Number: 063-2212D
Survey Coordinates: E: 1358946.50
SP27 N: 437741.02

Well No. SHMW-08HTB
Boring No. X-Ref: SHMW-08HTB
 Elevation Ground Level 2607.65 ft
 Elevation Top of Casing 2610.14 ft

Drilling Summary

Total Depth: 314.0 ft
 Borehole Diameter: 8.0 in
 Casing Stickup Height: 2.49 ft
 Driller: Braun Intertec: Kyle Haag

Rig: CME-75
 Bit(s): 3.75-inch TCP HQ-coring bit, 5-inch and 8-inch rotary bits
 Drilling Fluid: SW Pipeline Water and Mud (Wyo-Ben Extra High Yield Bentonite)
 Protective Casing: Steel, 6-inch square

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.5 - 281.1	C1	2610.1 - 2326.5
281.1 - 290.5	S1	2326.5 - 2317.2
290.5 - 291.3	C2	2317.2 - 2316.4
-	-	-
-	-	-
-	-	-

Casing: C1 4-inch Schedule 80 PVC Riser
 C2 4-inch Schedule 80 PVC Flush-threaded end cap
Screen: S1 4-inch Schedule 80 PVC 0.010-inch machine slotted
 S2 _____
Sand Pack: 0.45 - 0.55 E.S. Red Flint Sand (278.4 - 291.3 ft)

Grout Seal: Cetco High-Solids Granular Bentonite Grout (0 - 273.9 ft)

Bentonite Seal: Cetco Volclay/PureGold 1/4-inch Bentonite Tablets (273.9 - 278.4 ft)

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/24	1130	10/26	1340
Reaming	10/26	1650	10/27	1258
Well Install:				
Install Well	10/28	1038	10/28	1308
Sand Pack	10/28	1318	10/28	1354
Bentonite Seal	10/28	1357	10/28	1526
Grout	10/28	1548	10/28	1656
Surface Compl.	10/29	0700	10/29	0810

* Dates are 2009

Well Development

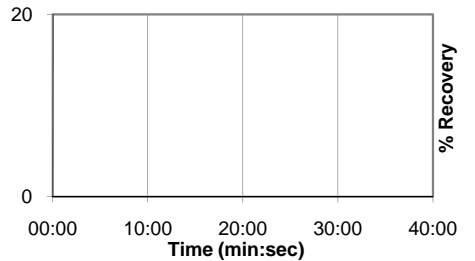
Depth to water initial: 16.35 final: 216
 Developed using Grundfos Redi-Flow 3 pump on 11/02/09 and 11/03/09. Removed a total of 147 gallons.

Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1645	9.19	1742	10.91
1715	9.35	1769	11.72
0825	8.67	1809	10.78
0930	9.27	1769	9.43

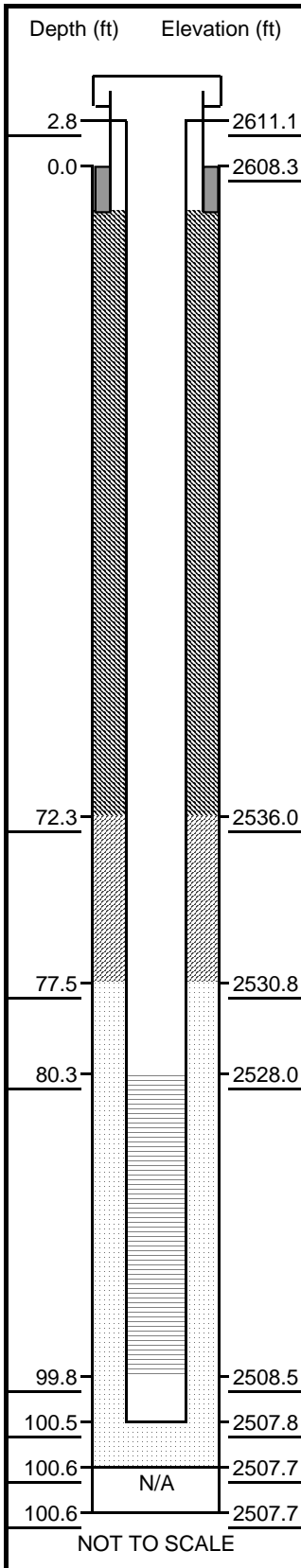
Recovery Data

Q= 0.948 gal/min
 S= 199.7 ft



Comments Drilled TD = 314 ft (HQ-coring), Reamed TD = 295 ft (8" rotary bit), Sloughed TD = 291.3 ft. Slough approximately from 291.3 - 314 feet. Sand, bentonite tablets, and grout placed by tremie pipe. Some sloughing likely in sand pack, bentonite seal and grout.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 437773.1
 E: 1358945.0

Well No. SHMW-08S
Boring No. X-Ref: SHMW-08
 Elevation Ground Level: 2608.3 ft
 Top of Casing: 2611.1 ft

Drilling Summary

Total Depth: 100.6 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.8 ft
 Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: None (See Comments)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/29			
PVC	10/29	1155		
Sand Pack	10/29	1215		
Bent. Seal	10/29	1222		
Grout	10/29	1255		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 80.3	C1	2605.5 - 2528.0
80.3 - 99.8	S1	2528.0 - 2508.5
99.8 - 100.0	C2	2508.5 - 2508.3
-		-
-		-
-		-

Well Development

Depth to water initial: 101.5 ft final: 101.65 ft
 Well developed with a bailer on 11/4/06
 and 11/5/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
 sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine
 slot (0.010-slot)
 S2

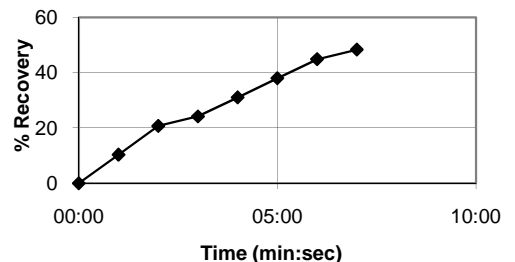
Stabilization Test Data 11/4 and 11/5

Time	pH	Spec. Cond.	Temp (°C)
1420	7.13	4.03 mS/cm	10.0
1628	7.28	3.88	9.5
0945	7.13	3.85	9.7
1153	7.20	3.74	10.1
1525	7.19	3.69	9.7

Sand Pack: 77.5 to 100.6 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 0.006 gal/min
 Approx. s = 0.5 ft

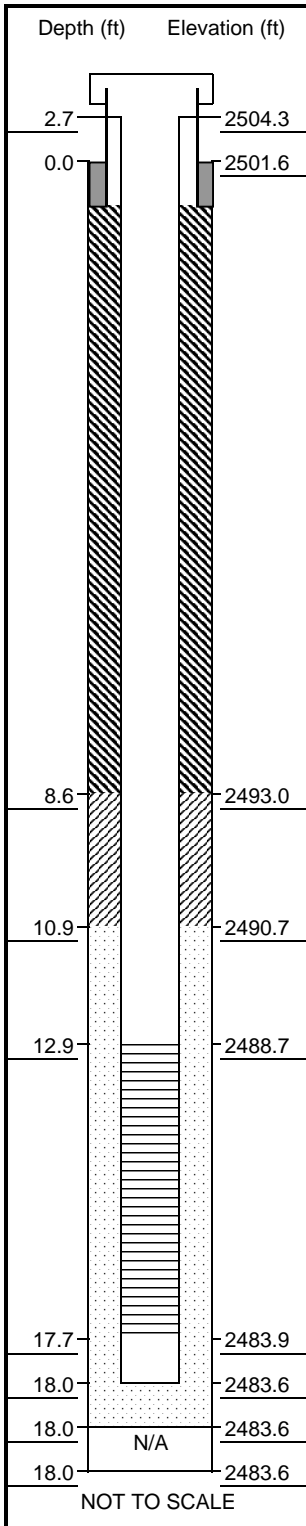


Grout Seal: 0 to 72.3 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 72.3 to 77.5 feet
 Puregold Medium Chips (hydrated)

Comments: No drill water used during air-drilling; 2-centralizers used in well installation. Approximately 10 gallons of water added during well installation. N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 438175.0
 E: 1370979.9

Well No. SHMW-09A1
Boring No. X-Ref: SHMW-09
Elevation Ground Level: 2501.6 ft
Top of Casing: 2504.3 ft

Drilling Summary

Total Depth: 18.0 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.71 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/3/07	8:55	5/3/07	9:30
PVC	5/3/07	9:30	5/3/07	9:37
Sand Pack	5/3/07	9:37	5/3/07	9:55
Bent. Seal	5/3/07	9:55	5/3/07	9:59
Grout Seal	5/3/07	10:30	5/3/07	10:32
Protector	5/3/07	10:32	5/3/07	10:35

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.7 - 12.9	C1	2498.9 - 2488.7
12.9 - 17.7	S1	2488.7 - 2483.9
17.7 - 18.0	C2	2483.9 - 2483.6
-	-	-
-	-	-
-	-	-

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Threaded End Cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

Sand Pack: 10.9 to 18.0 feet
45/55 Red Flint Sand

Grout Seal: 1 to 8.6 feet
CETCO Volclay Grout 20% solids

Bentonite Seal: 8.6 to 10.9 feet
Puregold Medium Chips (hydrated)

Well Development

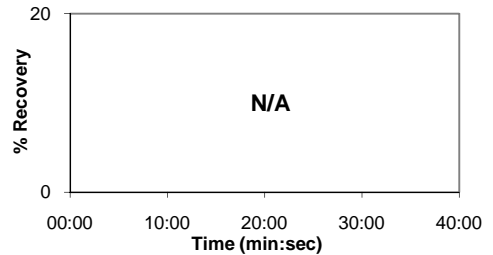
Depth to water initial: N/A ft **final:** N/A ft
Dry, well not developed

Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)

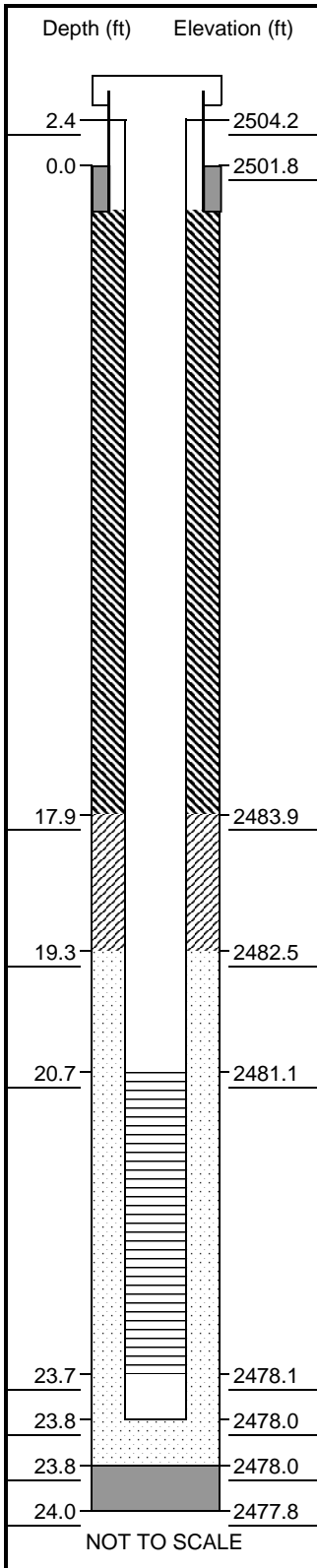
Recovery Data

Approx. Q = N/A gal/min
 Approx. s = N/A ft



Comments Puregold bentonite chips (bentonite seal) placed from 8.6 to 10.9 feet were hydrated with water before placing grout.
N/A indicates not applicable

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 438179.0
 E: 1370976.6

Well No. SHMW-09A2
Boring No. X-Ref: SHMW-09
Elevation Ground Level: 2501.8 ft
Top of Casing: 2504.2 ft

Drilling Summary

Total Depth: 24.0 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.42 ft
Driller: Braun Intertec
 (Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/2/07	16:33	5/2/07	17:12
PVC	5/2/07	17:12	5/2/07	17:25
Sand Pack	5/2/07	17:25	5/2/07	17:58
Bent. Seal	5/2/07	17:58	5/2/07	18:05
Grout Seal	5/3/07	8:00	5/3/07	8:45
Protector	5/3/07	8:45	5/3/07	8:50

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.4 - 20.7	C1	2499.4 - 2481.1
20.7 - 23.7	S1	2481.1 - 2478.1
23.7 - 23.8	C2	2478.1 - 2478.0
-	-	-
-	-	-
-	-	-

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
 Slip Cap
Screen: S1 2-inch diam. Sch 40 PVC
 with 0.010-inch slots
 S2 _____

Sand Pack: 19.3 to 23.8 feet
 45/55 Red Flint Sand

Grout Seal: 1 to 17.9 feet
 CETCO Volclay Grout 20% solids

Bentonite Seal: From 17.9-19.3 feet
 Puregold Medium Chips (hydrated)

Well Development

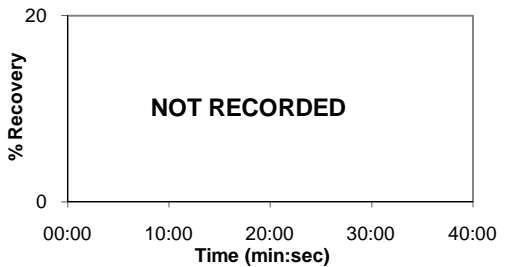
Depth to water initial: 18.84 ft final: ~24 ft
 Well developed with a pump on 5/17/07

Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1250	7.32	6.10 mS/cm	8.5
1258	7.33	6.45	8.5
1300	7.27	6.87	8.3
1302	7.31	6.45	8.5
1305	7.29	6.93	8.4

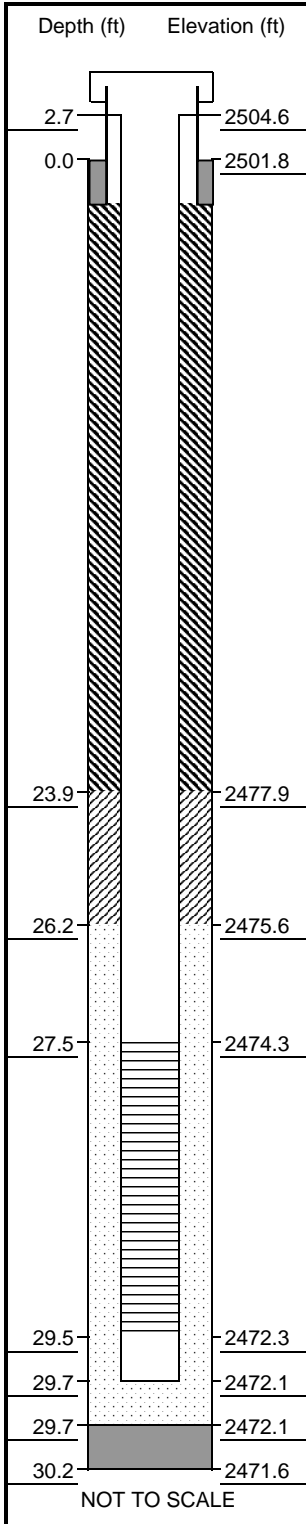
Recovery Data

Approx. Q = 1 gal/min
 Approx. s = ~5 ft



Comments Puregold bentonite chips (bentonite seal) placed from 17.9 to 19.3 feet were hydrated with water before placing grout. Slough from 23.8 to 24.0 feet.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 438182.0
 E: 1370973.5

Well No. SHMW-09S
Boring No. X-Ref: SHMW-09
Elevation Ground Level: 2501.8 ft
Top of Casing: 2504.6 ft

Drilling Summary

Total Depth: 30.2 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.72 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/2/07	10:30	5/2/07	12:30
PVC	5/2/07	13:40	5/2/07	13:46
Sand Pack	5/2/07	13:46	5/2/07	14:40
Bent. Seal	5/2/07	14:40	5/2/07	15:26
Grout Seal	5/2/07	15:26	5/2/07	16:00
Protector	5/2/07	16:00		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.7 - 27.5	C1	2499.1 - 2474.3
27.5 - 29.5	S1	2474.3 - 2472.3
29.5 - 29.7	C2	2472.3 - 2472.1
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 18.96 ft final: 31.55 ft
 Well developed with a bailer on 5/17/07 and 5/22/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
slip cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

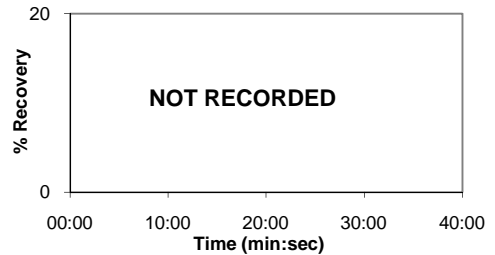
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
0927	8.05	2.69 mS/cm	8.6
1408	7.76	2.67	9.4
1451	7.77	2.59	9.0

Sand Pack: 26.2 to 29.7 feet
45/55 Red Flint Sand

Recovery Data

Approx. Q = 0.01 gal/min
 Approx. s = 11.22 ft

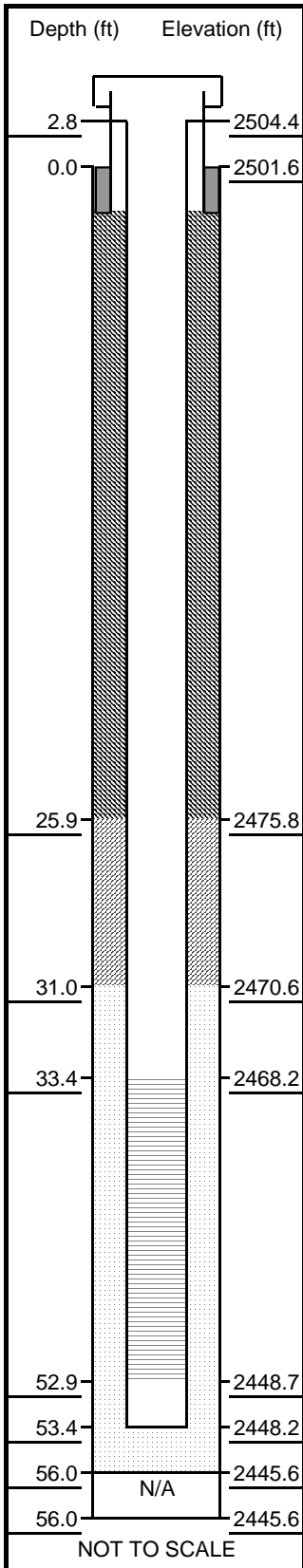


Grout Seal: 5 to 23.9 feet
CETCO Volclay Grout 20% solids
1-50lb bag / 24 gallons water

Bentonite Seal: 23.9 to 26.2 and 0 to 5 ft
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 23.9 to 26.2 feet were hydrated with water before placing grout. Slough from 29.7 to 30.2 feet.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 436711.1
 E: 1370596.9

Well No. SHMW-10C
Boring No. X-Ref: SHMW-10
Elevation Ground Level: 2501.6 ft
Top of Casing: 2504.4 ft

Drilling Summary

Total Depth: 56.0 ft
Borehole Diameter: 8.0 in
Casing Stickup Height: 2.8 ft
Driller: BOART LONGYEAR
(ALVIN ANDERSON)
Rig: GP24-300RS Rotasonic
Bits(s): 8-INCH RS; 7 5/8-inch Tri-Cone
Drilling Fluid: water (~50 gals.)
Protective Casing: 5-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/28			
PVC	10/28	1315		
Sand Pack	10/28	1355		
Bent. Seal	10/28	1403		
Grout	10/28	1425		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 33.4	C1	2498.8 - 2468.2
33.4 - 52.9	S1	2468.2 - 2448.7
52.9 - 53.0	C2	2448.7 - 2448.6
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 19.52 ft **final:** 16.56 ft
 Well developed with a bailer on 11/13/06.

Casing: C1 4-inch sch. 40 PVC riser
 C2 4-inch sch. 40 PVC
flat bottom cap (0.40-ft.)
Screen: S1 4-inch sch. 40 PVC machine
slot (0.020-slot)
 S2 _____

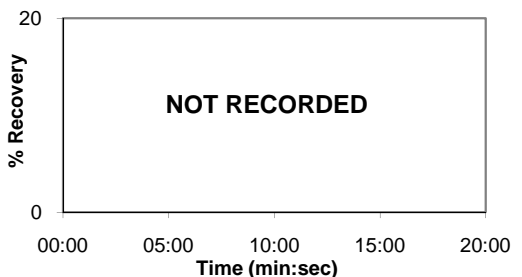
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1329	7.22	3.07 mS/cm	8.8
1344	7.31	3.01	8.4
1348	7.36	2.98	8.4
1356	7.28	3.01	8.3
1401	7.30	3.00	8.5

Sand Pack: 31.0 to 56.0 feet
10/20 (American #40)

Recovery Data

Approx. Q = Bail gal/min
 Approx. s = _____

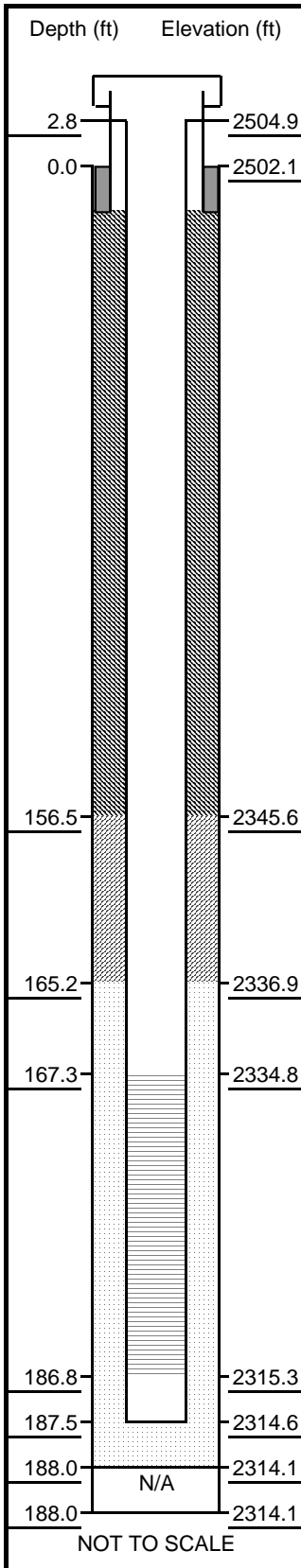


Grout Seal: 0 to 25.9 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 25.9 to 31.0 feet
Puregold Medium Chips (hydrated)

Comments 1-centralizer used in well installation.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 436763.3
 E: 1370597.7

Well No. SHMW-10D1
Boring No. X-Ref: SHMW-10
Elevation Ground Level: 2502.1 ft
Top of Casing: 2504.9 ft

Drilling Summary

Total Depth: 188.0 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 2.8 ft
Driller: BOART LONGYEAR
(ALVIN ANDERSON)
Rig: GP24-300RS Rotasonic
Bits(s): 6-INCH
Drilling Fluid: water (~200 gals.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/18			
PVC	10/18	1355		
Sand Pack	10/18	1450		
Bent. Seal	10/18	1510		
Grout	10/18	1620		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 167.3	C1	2499.3 - 2334.8
167.3 - 186.8	S1	2334.8 - 2315.3
186.8 - 187.0	C2	2315.3 - 2315.0
-		-
-		-
-		-

Well Development

Depth to water initial: 31.55 ft **final:** 127.85 ft
 Well developed with a bailer and pump on
11/4/06 to 11/7/06

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine
slot (0.010-slot)
 S2 _____

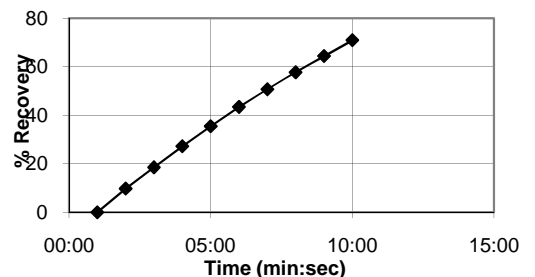
Stabilization Test Data 11/6 and 11/7

Time	pH	Spec. Cond.	Temp (°C)
1316	8.1	1.891 mS/cm	11.1
1446	8.11	1.892	11.5
1606	8.14	1.873	11.7
0828	8.08	1.906	10.7
0921	8.12	1.890	11.8

Sand Pack: 165.2 to 188.0 feet
10/20 (American #40)

Recovery Data

Approx. Q = 1 gal/min
 Approx. s = 50 ft

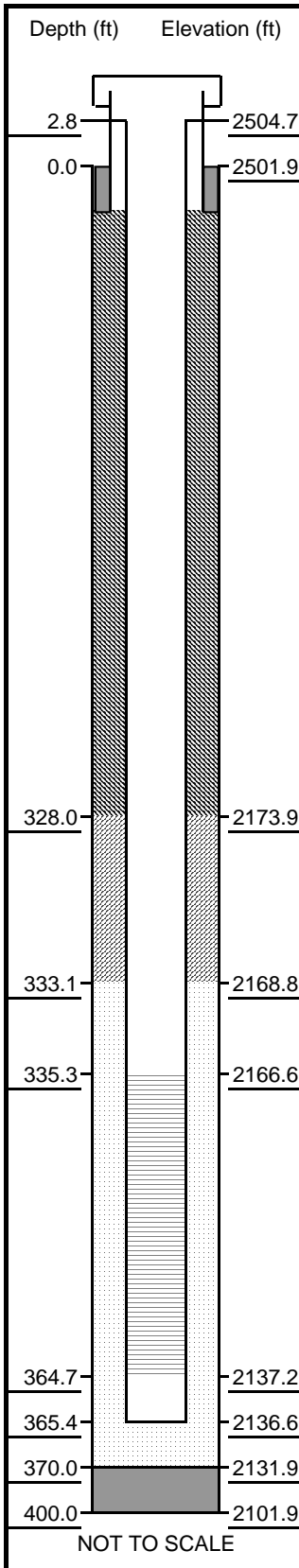


Grout Seal: 0 to 156.5 feet
Bentonite clay grout
(1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 156.5 to 165.2 feet
Puregold Medium Chips (hydrated)

Comments: Airlifted borehole water out before beginning well installation.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 436730.2
 E: 1370596.4

Well No. SHMW-10D2
Boring No. X-Ref: SHMW-10
 Elevation Ground Level: 2501.9 ft
 Top of Casing: 2504.7 ft

Drilling Summary

Total Depth: 400.0 ft
 Borehole Diameter: 8.0 in
 Casing Stickup Height: 2.8 ft
 Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~2500 gals.)
 Protective Casing: 5-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	9/29			
PVC	10/11	1100		
Sand Pack	10/11	1630		
Bent. Seal	10/11	1650		
Grout	10/12	0840		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 335.3	C1	2499.1 - 2166.6
335.3 - 364.7	S1	2166.6 - 2137.2
364.7 - 365.0	C2	2137.2 - 2137.0
-	-	-
-	-	-
-	-	-

Casing: C1 4-inch sch. 80 PVC riser
 C2 4-inch sch. 80 PVC
 flat bottom cap (0.40-ft.)
Screen: S1 4-inch sch. 80 PVC machine
 slot (0.020-slot)
 S2 _____

Sand Pack: 333.1 to 370.0 feet
 10/20 (American #40)

Grout Seal: 0 to 328.0 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 328.0 to 333.1 feet
 Puregold Medium Chips (hydrated)

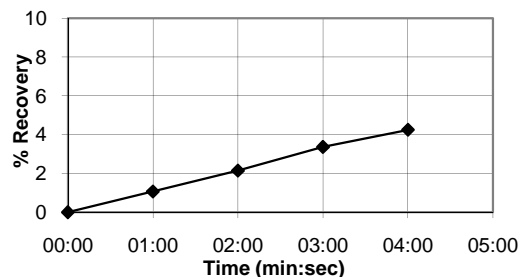
Well Development

Depth to water initial: 122.56 ft final: 288.55 ft
 Well developed with a bailer and pump on
 11/13/06 through 11/16/06.

Stabilization Test Data 11/15 and 11/16

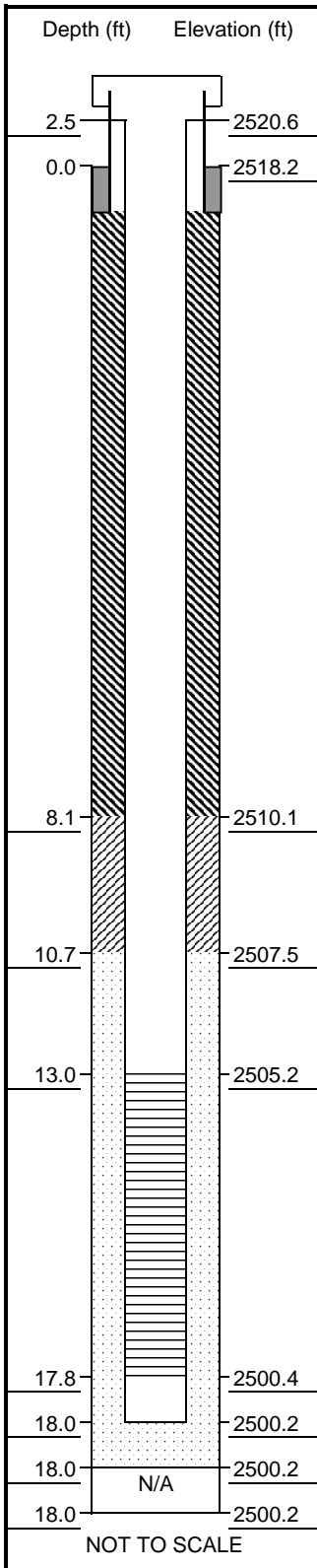
Time	pH	Spec. Cond.	Temp (°C)
1300	8.63	1.463 mS/cm	12
1309	8.64	1.610	11.9
1326	8.67	1.600	11.9
1339	8.67	1.602	12.1

Recovery Data Approx. Q = 0.7 gal/min
 Approx. s = 134.0 ft



Comments: Borehole backfilled from 400 to 370 ft. bgs with hydrated bentonite chips.
 Original 6-inch diameter borehole converted to 8-inch diameter borehole to set 4-inch diameter well.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 434144.7
 E: 1362250.2

Well No. SHMW-11A1
Boring No. X-Ref: SHMW-11
 Elevation Ground Level: 2518.2 ft
 Top of Casing: 2520.6 ft

Drilling Summary

Total Depth: 18.0 ft
 Borehole Diameter: 7.5 in
 Casing Stickup Height: 2.45 ft
 Driller: Braun Intertec
 (Chris, Brian, Brad)
 Rig: CME 850
 Bits(s): Hollow Stem Auger
 Drilling Fluid: None
 Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/2/07	7:50	5/2/07	8:10
PVC	5/2/07	8:10	5/2/07	8:15
Sand Pack	5/2/07	8:15	5/2/07	8:45
Bent. Seal	5/2/07	8:45	5/2/07	9:20
Grout Seal	5/2/07	9:20	5/2/07	9:30
Protector	5/2/07	9:30	5/2/07	9:35

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.5 - 13.0	C1	2515.7 - 2505.2
13.0 - 17.8	S1	2505.2 - 2500.4
17.8 - 18.0	C2	2500.4 - 2500.2
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 13.82 ft final: 16.49 ft
 Well developed with a bailer on 5/17/07,
 5/18/07, and 5/22/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
 Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
 with 0.010-inch slots
 S2 _____

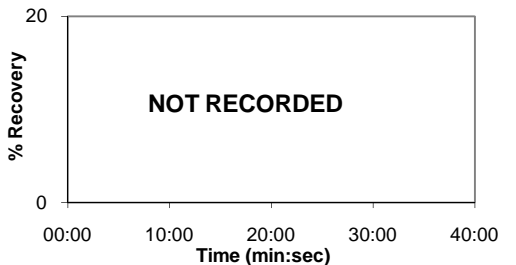
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1854	7.20	1.81 mS/cm	12.8
1053	7.05	1.95	9.0
1257	7.26	1.91	9.0
1108	7.12	1.85	8.1
1132	7.17	1.87	8.0

Sand Pack: 10.7 to 18.0 feet
 45/55 Red Flint Sand

Recovery Data

Approx. Q = ~0.03 gal/min
 Approx. s = 2.67 ft

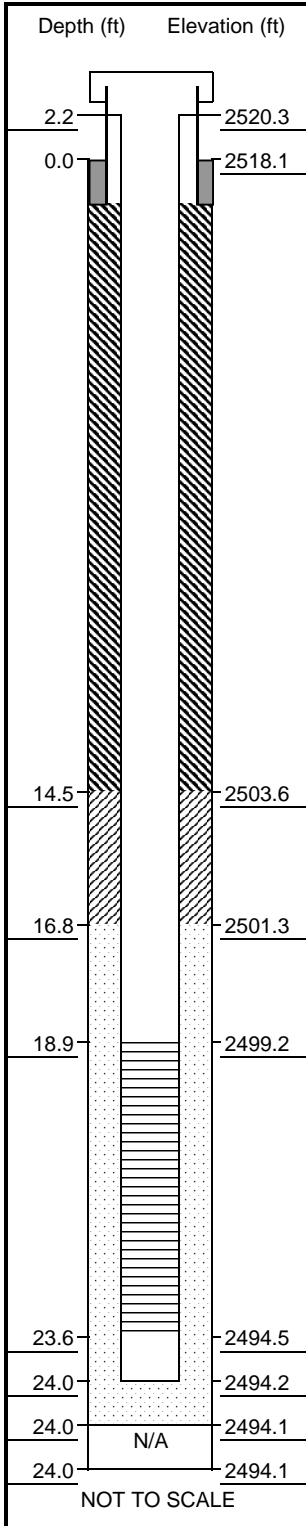


Grout Seal: 0 to 8.1 feet
 CETCO Volclay Grout 20% solids

Bentonite Seal: 8.1 to 10.7 feet
 Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 8.1 to 10.7 feet were hydrated with water before placing grout.
 N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 434139.4
 E: 1362247.2

Well No. SHMW-11A2
Boring No. X-Ref: SHMW-11
Elevation Ground Level: 2518.1 ft
Top of Casing: 2520.3 ft

Drilling Summary

Total Depth: 24.0 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.18 ft
Driller: Braun Intertec
 (Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: SW pipeline (~50 gals.)
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/1/07	15:00	5/1/07	15:30
PVC	5/1/07	15:30	5/1/07	15:42
Sand Pack	5/1/07	15:44	5/1/07	16:10
Bent. Seal	5/1/07	16:10	5/1/07	16:17
Grout Seal	5/1/07	16:50	5/1/07	17:08
Protector	5/1/07	17:08	5/1/07	17:10

Well Design and Specifications

Basis: _____
 Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.2 - 18.9	C1	2515.9 - 2499.2
18.9 - 23.6	S1	2499.2 - 2494.5
23.6 - 24.0	C2	2494.5 - 2494.2
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 13.61 ft final: ~25 ft
 Well developed with a pump on 5/17/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

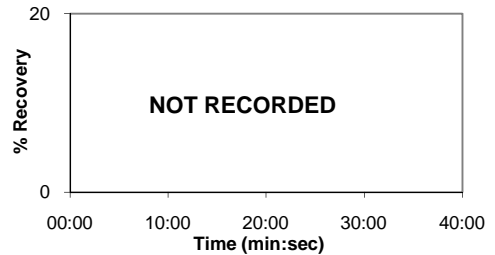
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1739	7.18	1.76 mS/cm	10.0
1749	7.12	2.06	11.1
1801	7.14	2.23	9.9
1815	7.11	2.29	10.5
1826	7.13	2.21	10.7

Sand Pack: 16.8 to 24.0 feet
45/55 Red Flint Sand

Recovery Data

Approx. Q = 0.6 gal/min
 Approx. s = ~11 ft

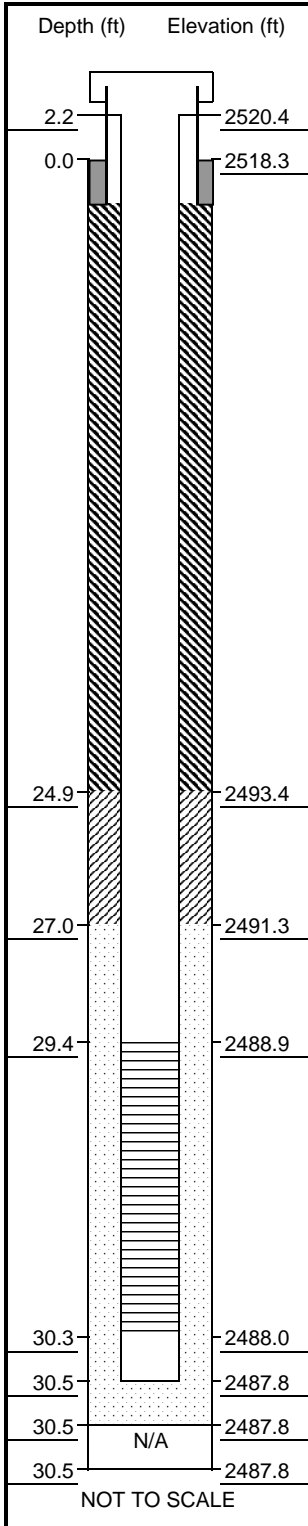


Grout Seal: 1 to 14.5 feet
CETCO Volclay Grout 20% solids

Bentonite Seal: 14.5 to 16.8 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 14.5 to 16.8 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 434134.8
 E: 1362244.5

Well No.: SHMW-11S
Boring No. X-Ref: SHMW-11
Elevation Ground Level: 2518.3 ft
Top of Casing: 2520.4 ft

Drilling Summary

Total Depth: 30.5 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.20 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: SW pipeline
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/1/07	11:10	5/1/07	12:45
PVC	5/1/07	12:55	5/1/07	13:30
Sand Pack	5/1/07	13:30	5/1/07	13:45
Bent. Seal	5/1/07	13:45	5/1/07	13:55
Grout Seal	5/1/07	14:30	5/1/07	14:45
Protector	5/1/07	14:45	5/1/07	14:53

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.2 - 29.4	C1	2516.1 - 2488.9
29.4 - 30.3	S1	2488.9 - 2488.0
30.3 - 30.5	C2	2488.0 - 2487.8
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 13.57 ft final: -30 ft
 Well developed with a pump on 5/17/07 and then with a bailer on 5/18/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Slip Cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

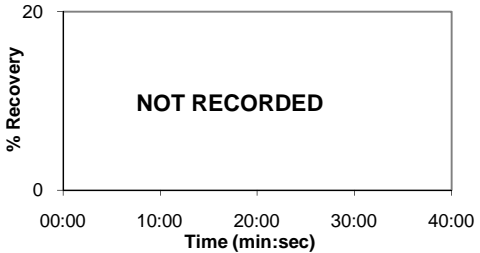
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1844	7.08	2.57 mS/cm	10.2
1048	6.82	2.69	11.3
1203	6.97	2.54	12.9
1253	7.06	2.65	10.7

Sand Pack: 26.95 to 30.5 feet
45/55 Red Flint Sand

Recovery Data Approx. Q = ~ 0.07 gal/min
 Approx. s = ~ 16 ft

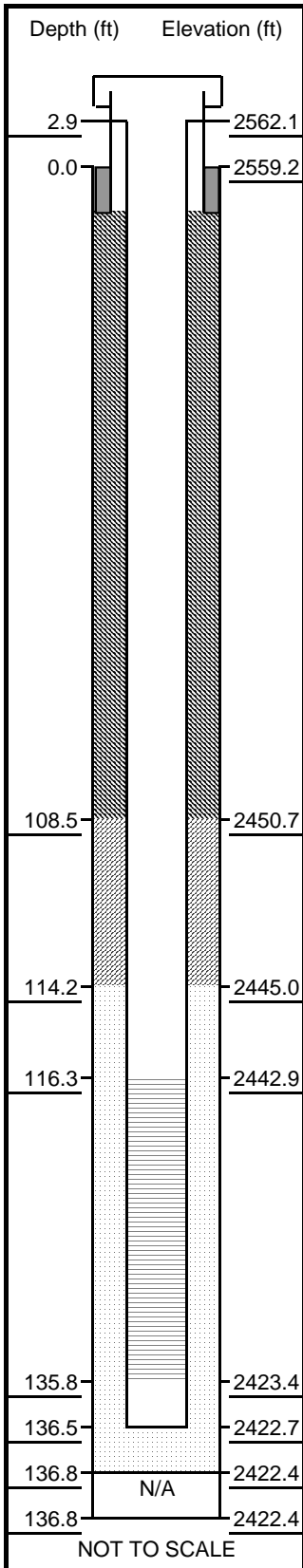
Grout Seal: 1 to 24.9 feet
CETCO Volclay Grout 20% solids



Bentonite Seal: 24.9 to 26.95 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 24.9 to 26.95 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 432035.6
 E: 1369165.4

Well No. SHMW-12C
Boring No. X-Ref: SHMW-12
 Elevation Ground Level 2559.2 ft
 Top of Casing 2562.1 ft

Drilling Summary

Total Depth: 136.8 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.9 ft
 Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
 Rig: GP24-300RS Rotasonic
 Bits(s): 6-INCH RS; 5 5/8-inch Tri-Cone.
 Drilling Fluid: water (~200 gals.)
 (~40 gals. added during well installation.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/27			
PVC	10/28	0728		
Sand Pack	10/28	0905		
Bent. Seal	10/28	0940		
Grout	10/28	0955		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.9 - 116.3	C1	2556.3 - 2442.9
116.3 - 135.8	S1	2442.9 - 2423.4
135.8 - 136.0	C2	2423.4 - 2423.2
-		-
-		-
-		-

Well Development

Depth to water initial: 58.88 ft final: 60.05 ft
 Well developed with a bailer and pump
 on 11/3/06 and 11/9/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
 sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine
 slot (0.010-slot)
 S2

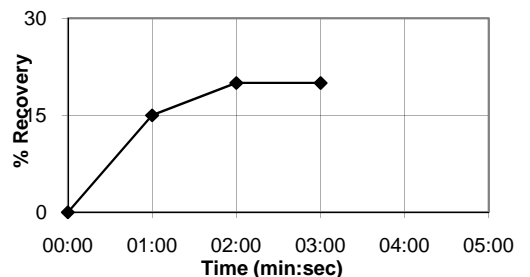
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1218	7.18	2.31 mS/cm	9.7
1240	7.26	2.32	9.7
1303	7.26	2.31	9.7
1325	7.18	2.32	9.7
1330	7.21	2.32	9.7

Sand Pack: 114.2 to 116.3 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 2.0 gal/min
 Approx. s = 1.0 ft

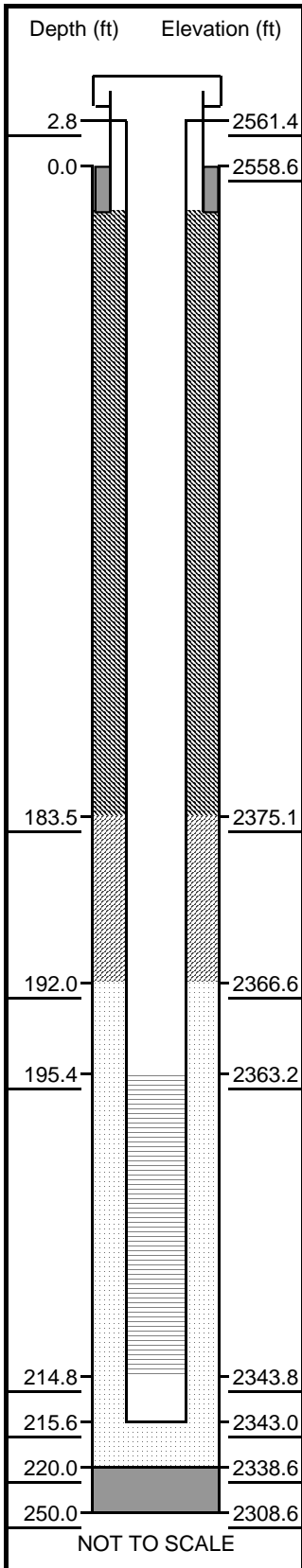


Grout Seal: 0 to 108.5 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 108.5 to 114.2 feet
 Puregold Medium Chips (hydrated)

Comments: 1-centralizer used in well installation.
 N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 432061.7
 E: 1369166.4

Well No. SHMW-12D
Boring No. X-Ref: SHMW-12
Elevation Ground Level: 2558.6 ft
Top of Casing: 2561.4 ft

Drilling Summary

Total Depth: 250.0 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 2.8 ft
Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
Rig: GP24-300RS Rotasonic
Bits(s): 6-INCH
Drilling Fluid: water (~1200 gals.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/12			
PVC	10/14	1145		
Sand Pack	10/14	1405		
Bent. Seal	10/14	1425		
Grout	10/14	1450		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 195.4	C1	2555.8 - 2363.2
195.4 - 214.8	S1	2363.2 - 2343.8
214.8 - 215.2	C2	2343.8 - 2343.5
-		-
-		-
-		-

Well Development

Depth to water initial: 66.1 ft **final:** 214 ft
 Well developed with a bailer and pump on 11/9/06, 11/11/06, and 11/16/06 through 11/19/06.

Casing: C1 2-inch sch. 80 PVC riser
 C2 2-inch sch. 80 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 80 PVC machine slot (0.010-slot)
 S2 _____

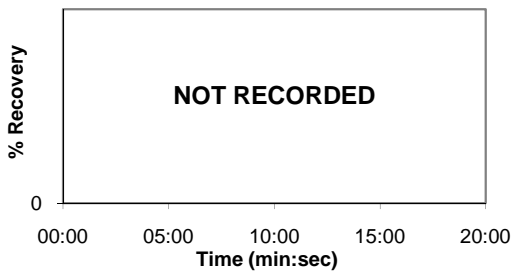
Stabilization Test Data 11/17 to 11/19

Time	pH	Spec. Cond.	Temp (°C)
1022	8.29	1.543 mS/cm	9.7
1546	8.28	1.807	10.0
1557	8.29	1.840	10.0
1605	8.25	1.679	12.7
1453	8.27	1.774	9.9

Sand Pack: 192.0 to 220.0 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 0.2 gal/min
 Approx. s = 61 ft

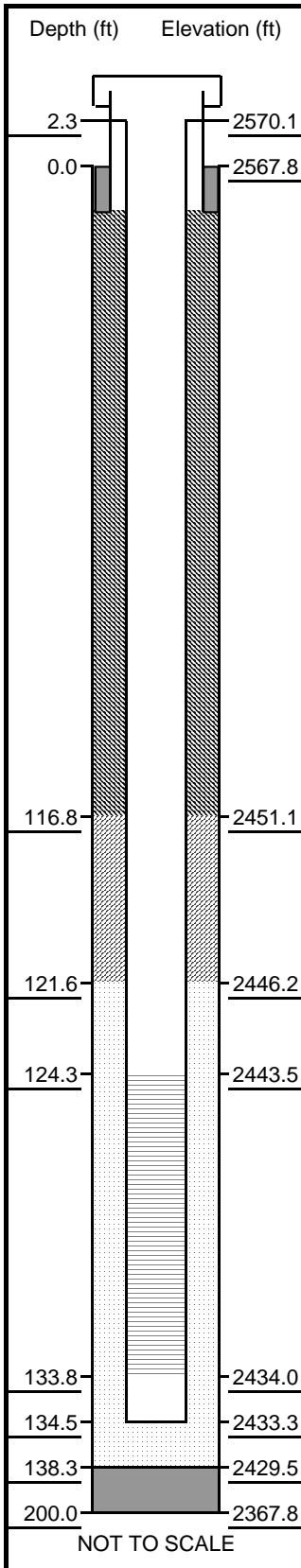


Grout Seal: 0 to 183.5 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 183.5 to 192.0 feet
 Puregold Medium Chips (hydrated)

Comments: Borehole backfilled from 250 to 220 ft. bgs with hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 425009.0
 E: 1364905.5

Well No. SHMW-13C
Boring No. X-Ref: SHMW-13
 Elevation Ground Level: 2567.8 ft
 Top of Casing: 2570.1 ft

Drilling Summary

Total Depth: 200.0 ft
 Borehole Diameter: 6.0 in
 Casing Stickup Height: 2.3 ft
 Driller: BOART LONGYEAR
 (TOM DEVICK)
 Rig: RD-300RS Rotosonic
 Bits(s): 6-INCH
 Drilling Fluid: water (~800 gals.)
 Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/14			
PVC	10/15	0743		
Sand Pack	10/15	0812		
Bent. Seal	10/15	0843		
Grout	10/15	1015		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 124.3	C1	2565.5 - 2443.5
124.3 - 133.8	S1	2443.5 - 2434.0
133.8 - 134.0	C2	2434.0 - 2433.8
-		-
-		-
-		-

Well Development

Depth to water initial: 120 ft final: 135.79 ft
 Well developed with a bailer and pump on
 11/2/06, 11/4/06, 11/7/06, 11/19/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC
 sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine
 slot (0.10-slot)
 S2

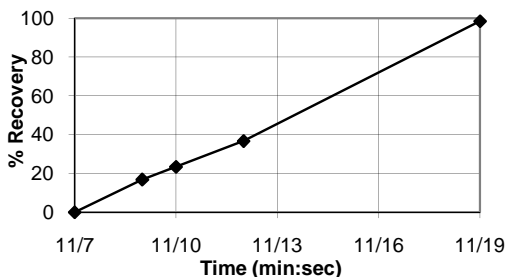
Stabilization Test Data 11/4 and 11/19

Time	pH	Spec. Cond.	Temp (°C)
1046	8.17	8.57 mS/cm	10.5
1325	8.17	1.346	9.5
1338	7.95	1.549	9.3
1346	7.95	1.404	9.4

Sand Pack: 121.6 to 138.3 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 0.12 gal/min
 Approx. s = 74 ft

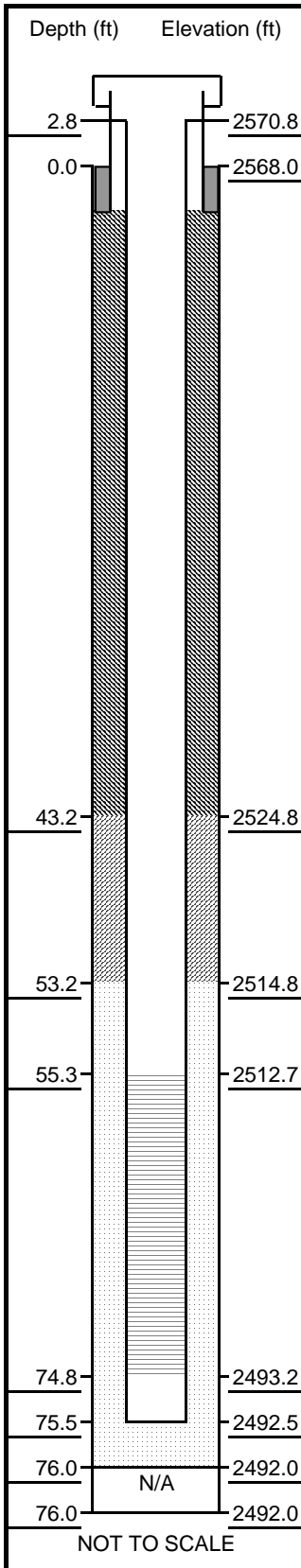


Grout Seal: 0 to 116.8 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)

Bentonite Seal: 116.8 to 121.6 feet
 Puregold Medium Chips (hydrated)

Comments Borehole drilled to approx. 200 ft. bgs; backfilled to 138.3 ft. bgs using hydrated bentonite chips.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2174
Survey Coordinates: N: 425006.2
 E: 1364890.8

Well No. SHMW-13S
Boring No. X-Ref: SHMW-13
Elevation Ground Level: 2568.0 ft
Top of Casing: 2570.8 ft

Drilling Summary

Total Depth: 76.0 ft
Borehole Diameter: 6.0 in
Casing Stickup Height: 2.8 ft
Driller: BOART LONGYEAR
 (ALVIN ANDERSON)
Rig: GP24-300RS Rotasonic
Bits(s): 6-INCH RS
Drilling Fluid: water (~1200 gals.)
Protective Casing: 7-FT. STEEL

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	10/27			
PVC	10/27	1225		
Sand Pack	10/27	1325		
Bent. Seal	10/27	1340		
Grout	10/27	1350		

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.8 - 55.3	C1	2565.2 - 2512.7
55.3 - 74.8	S1	2512.7 - 2493.2
74.8 - 75.0	C2	2493.2 - 2492.9
-		-
-		-
-		-

Well Development

Depth to water initial: 40.83 ft **final:** 76.52 ft
 Well developed with a bailer and pump on 11/2/06, 11/4/06, 11/7/06, and 11/9/06.

Casing: C1 2-inch sch. 40 PVC riser
 C2 2-inch sch. 40 PVC sandpoint cap (0.48 ft.)
Screen: S1 2-inch sch. 40 PVC machine slot (0.010-slot)
 S2 _____

Stabilization Test Data 11/11 and 11/13

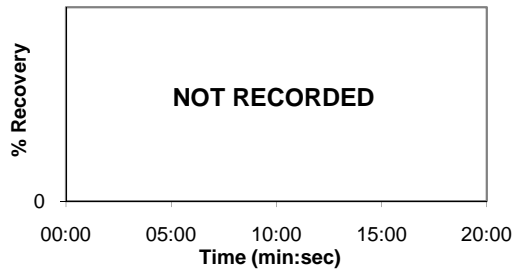
Time	pH	Spec. Cond.	Temp (°C)
1058	8.23	2.91 mS/cm	8.2
1203	8.25	2.87	8.4
1021	8.22	2.92	9.4

Sand Pack: 53.2 to 76.0 feet
 10/20 (American #40)

Recovery Data

Approx. Q = 0.2 gal/min
 Approx. s = 30 ft

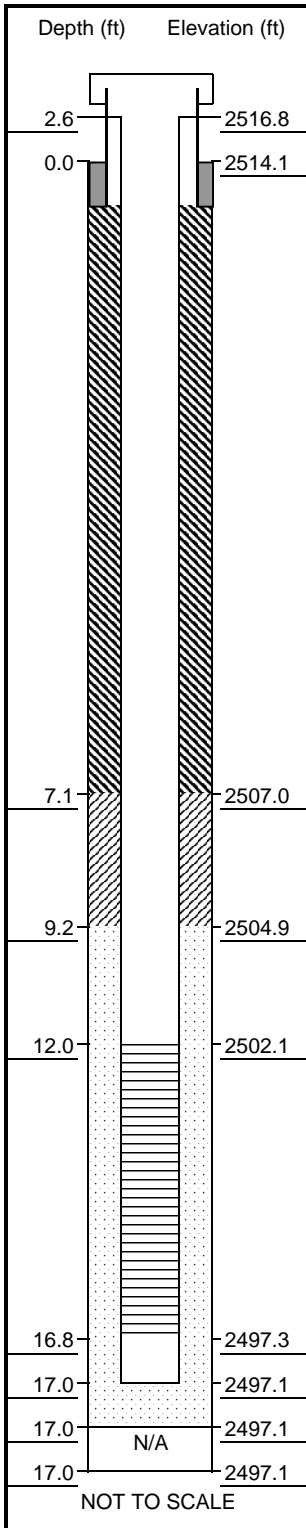
Grout Seal: 0 to 43.2 feet
 Bentonite clay grout
 (1.5 lbs bentonite to 1 gallon water)



Bentonite Seal: 43.2 to 53.2 feet
 Puregold Medium Chips (hydrated)

Comments: N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 433181.7
 E: 1365965.0

Well No. SHMW-14A1
Boring No. X-Ref: SHMW-14
Elevation Ground Level: 2514.1 ft
Top of Casing: 2516.8 ft

Drilling Summary

Total Depth: 17.0 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.65 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None (See Comments)
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/5/07	11:30	5/5/07	11:50
PVC	5/5/07	11:59	5/5/07	11:59
Sand Pack	5/5/07	11:59	5/5/07	12:55
Bent. Seal	5/5/07	12:55	5/5/07	13:00
Grout Seal	5/5/07	13:35	5/5/07	13:40
Protector	5/5/07	13:40	5/5/07	13:45

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.6 - 12.0	C1	2511.5 - 2502.1
12.0 - 16.8	S1	2502.1 - 2497.3
16.8 - 17.0	C2	2497.3 - 2497.1
-		-
-		-
-		-

Well Development

Depth to water initial: 9.68 ft final: ~19.5 ft
 Well developed with a pump on 5/17/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

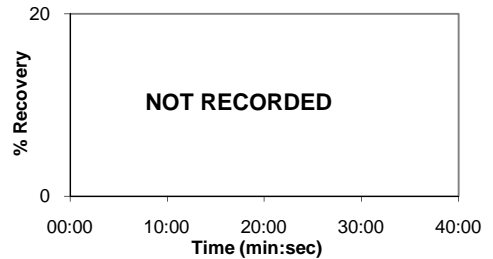
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1613	7.75	2.71 mS/cm	8.4
1618	7.73	2.86	8.7
1623	7.69	2.97	8.1
1627	7.69	3.02	7.9
1630	7.72	3.03	8.1

Sand Pack: 9.2 to 17.0 feet
45/55 Red Flint Sand

Recovery Data

Approx. Q = 1.5 gal/min
 Approx. s = ~9.8 ft

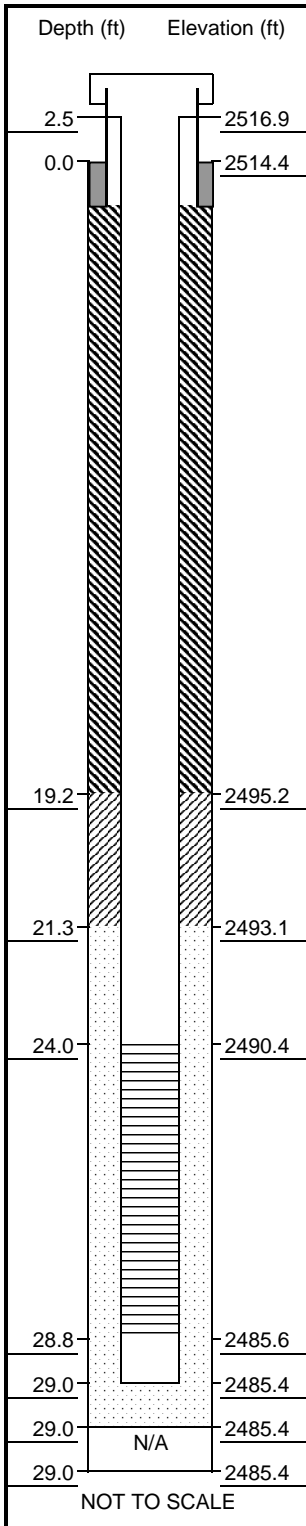


Grout Seal: 1 to 7.1 feet
CETCO Volclay Grout 20% solids

Bentonite Seal: 7.1 to 9.2 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 7.1 to 9.2 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 433184.7
 E: 1365967.5

Well No. SHMW-14A2
Boring No. X-Ref: SHMW-14
Elevation Ground Level: 2514.4 ft
Top of Casing: 2516.9 ft

Drilling Summary

Total Depth: 29.0 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.49 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None (See Comments)
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/5/07	8:15	5/5/07	8:47
PVC	5/5/07	9:25	5/5/07	9:27
Sand Pack	5/5/07	9:27	5/5/07	9:56
Bent. Seal	5/5/07	9:56	5/5/07	10:06
Grout Seal	5/5/07	10:45	5/5/07	11:14
Protector	5/5/07	11:14	5/5/07	11:16

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.5 - 24.0	C1	2511.9 - 2490.4
24.0 - 28.8	S1	2490.4 - 2485.6
28.8 - 29.0	C2	2485.6 - 2485.4
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 9.92 ft final: 11.92 ft
 Well developed with a pump on 5/17/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

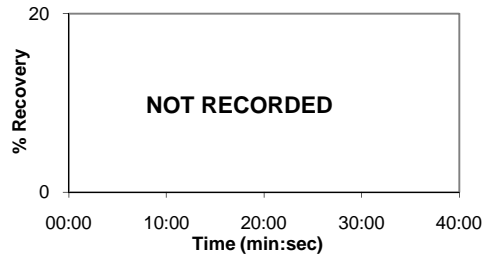
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1550	7.71	2.64 mS/cm	9.2
1553	7.75	2.71	9.1
1556	7.76	2.71	9.1
1559	7.75	2.68	8.8
1604	7.75	2.71	9.7

Sand Pack: 21.3 to 29.0 feet
45/55 Red Flint Sand

Recovery Data

Approx. Q = 1.5 gal/min
 Approx. s = 2 ft

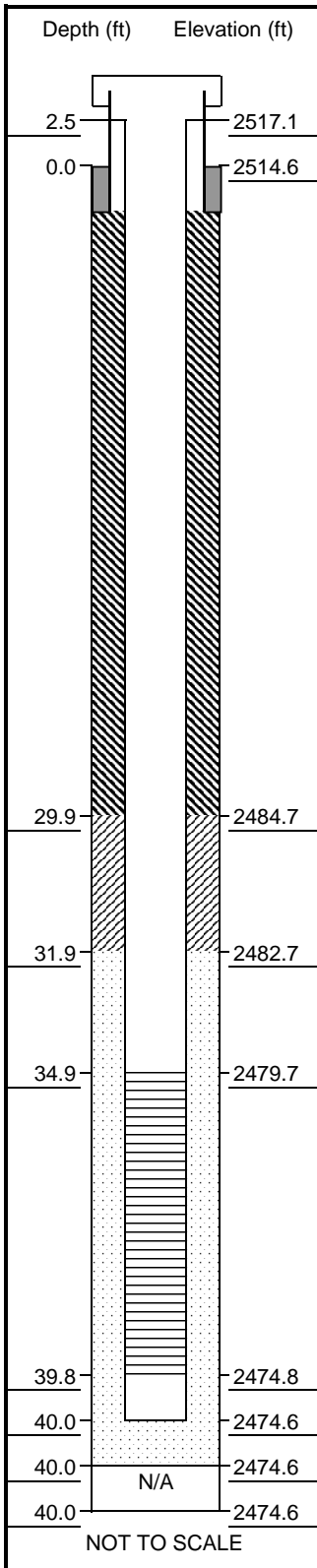


Grout Seal: 1 to 19.2 feet
CETCO Volclay Grout 20% solids

Bentonite Seal: 19.2 to 21.3 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 19.2 to 21.3 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 433187.9
 E: 1365969.9

Well No. SHMW-14S
Boring No. X-Ref: SHMW-14
 Elevation Ground Level: 2514.6 ft
 Top of Casing: 2517.1 ft

Drilling Summary

Total Depth: 40.0 ft
 Borehole Diameter: 7.5 in
 Casing Stickup Height: 2.51 ft
 Driller: Braun Intertec
 (Chris, Brian, Brad)
 Rig: CME 850
 Bits(s): Hollow Stem Auger
 Drilling Fluid: SW pipeline (~75 gals.)
 Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
drilling	5/4/07	11:45	5/4/07	13:30
PVC	5/4/07	14:10	5/4/07	14:15
Sand Pack	5/4/07	14:15	5/4/07	15:32
Bent. Seal	5/4/07	15:32	5/4/07	15:40
Grout Seal	5/4/07	16:18	5/4/07	16:54
Protector	5/4/07	16:55	5/4/07	17:00

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.5 - 34.9	C1	2512.1 - 2479.7
34.9 - 39.8	S1	2479.7 - 2474.8
39.8 - 40.0	C2	2474.8 - 2474.6
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 9.95 ft final: 33 ft
 Well developed with a pump on 5/17/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
 Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
 with 0.010-inch slots
 S2 _____

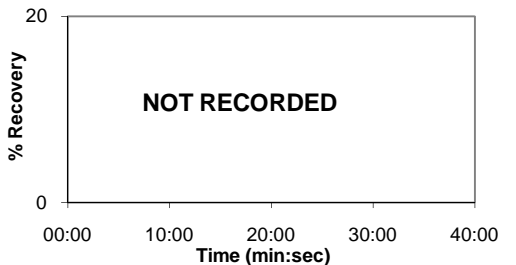
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1433	7.45	2.38 mS/cm	10.1
1443	7.40	2.74	10.2
1459	7.43	2.71	10.2
1535	7.47	2.75	9.2
1542	7.49	2.32	9.9

Sand Pack: 31.9 to 40.0 feet
 45/55 Red Flint Sand

Recovery Data

Approx. Q = 1 gal/min
 Approx. s = 23.05 ft

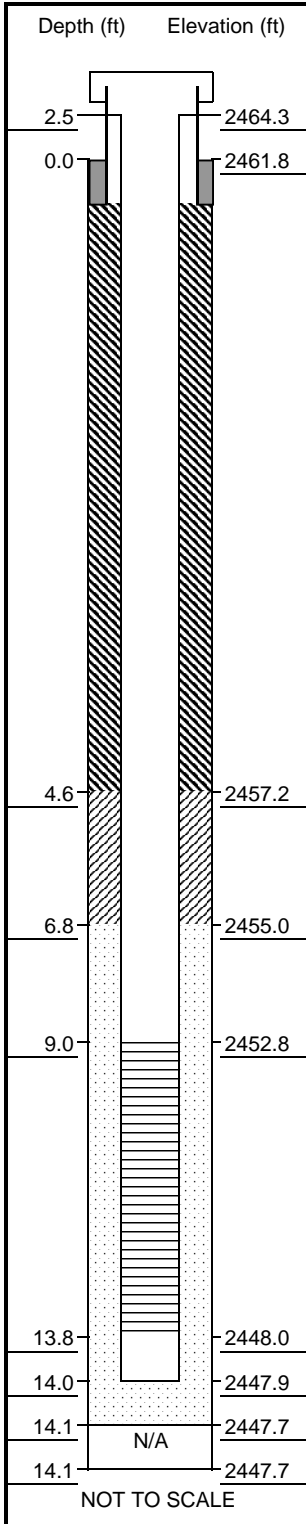


Grout Seal: 0 to 29.9 feet
 CETCO Volclay Grout 20% solids

Bentonite Seal: 29.9 to 31.9 feet
 Puregold Medium Chips (hydrated)

Comments Drilled to 40 ft., sampled to 42 ft. Puregold bentonite chips (bentonite seal) placed from 29.9 to 31.9 feet were hydrated with water before placing grout.
 N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 448524.1
 E: 1376139.3

Well No.: SHMW-15A1
Boring No. X-Ref: SHMW-15
Elevation Ground Level: 2461.8 ft
Top of Casing: 2464.3 ft

Drilling Summary

Total Depth: 14.1 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.51 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/4/07	8:25	5/4/07	8:46
PVC	5/4/07	8:50	5/4/07	8:55
Sand Pack	5/4/07	8:55	5/4/07	9:30
Bent. Seal	5/4/07	9:30	5/4/07	9:37
Grout Seal	5/4/07	10:10	5/4/07	10:15
Protector	5/4/07	10:15	5/4/07	10:17

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.5 - 9.0	C1	2459.3 - 2452.8
9.0 - 13.8	S1	2452.8 - 2448.0
13.8 - 14.0	C2	2448.0 - 2447.9
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 9.65 ft final: 11.39 ft
 Well developed with a pump on 5/17/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

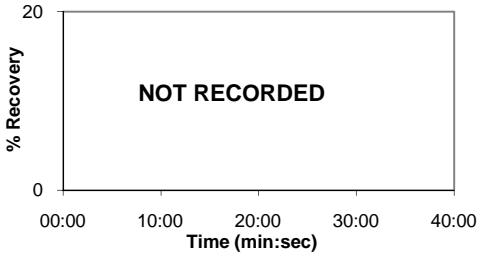
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
0856	7.34	3.20 mS/cm	7.5
0906	7.31	3.14	8.0
0918	7.32	3.20	7.2
0927	7.32	3.20	8.2
0935	7.34	3.16	7.0

Sand Pack: 6.8 to 14.1 feet
45/55 Red Flint Sand

Recovery Data Approx. Q = 0.6 gal/min
 Approx. s = 1.74 ft

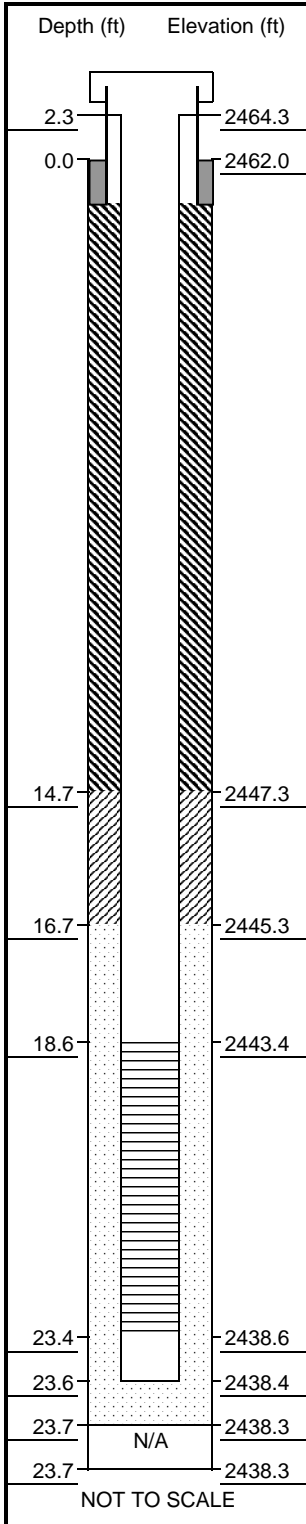
Grout Seal: 1 to 4.6 feet
CETCO Volclay Grout 20% solids



Bentonite Seal: 4.6 to 6.8 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 4.6 to 6.8 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 448528.3
 E: 1376138.0

Well No.: SHMW-15A2
Boring No. X-Ref: SHMW-15
Elevation Ground Level: 2462.0 ft
Top of Casing: 2464.3 ft

Drilling Summary

Total Depth: 23.7 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.30 ft
Driller: Braun Intertec
(Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None (See Comments)
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/3/07	16:28	5/3/07	16:50
PVC	5/3/07	16:52	5/3/07	17:00
Sand Pack	5/3/07	17:00	5/3/07	17:42
Bent. Seal	5/3/07	17:42	5/3/07	17:47
Grout Seal	5/4/07	7:55	5/4/07	8:15
Protector	5/4/07	8:15	5/4/07	8:20

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.3 - 18.6	C1	2459.7 - 2443.4
18.6 - 23.4	S1	2443.4 - 2438.6
23.4 - 23.6	C2	2438.6 - 2438.4
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 9.16 ft final: 24.31 ft
 Well developed with a pump on 5/17/07 and with a bailer on 5/22/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
with 0.010-inch slots
 S2 _____

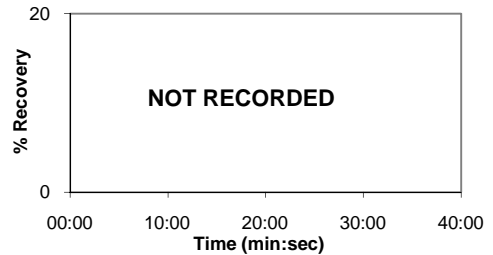
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1143	7.72	3.12 mS/cm	11.1
1201	7.66	2.96	8.2
1221	7.78	2.92	8.2
1332	7.80	2.97	8.8

Sand Pack: 16.7 to 23.7 feet
45/55 Red Flint Sand

Recovery Data

Approx. Q = ~ 0.05 gal/min
 Approx. s = 15.38 ft

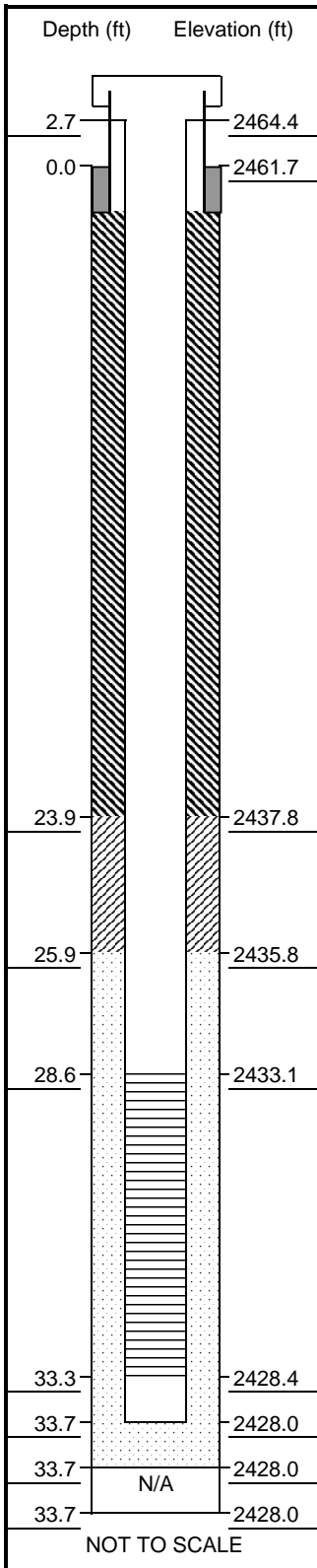


Grout Seal: 1 to 14.7 feet
CETCO Volclay Grout 20% solids

Bentonite Seal: 14.7 to 16.7 feet
Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 14.7 to 16.7 feet were hydrated with water before placing grout.
N/A indicates not applicable.

MONITORING WELL CONSTRUCTION SUMMARY



Site Location: South Heart, ND
Project Number: 063-2212
Survey Coordinates: N: 448532.3
 E: 1376136.5

Well No. SHMW-15S
Boring No. X-Ref: SHMW-15
Elevation Ground Level: 2461.7 ft
Top of Casing: 2464.4 ft

Drilling Summary

Total Depth: 33.7 ft
Borehole Diameter: 7.5 in
Casing Stickup Height: 2.73 ft
Driller: Braun Intertec
 (Chris, Brian, Brad)
Rig: CME 850
Bits(s): Hollow Stem Auger
Drilling Fluid: None (See Comments)
Protective Casing: 6-inch diam. Steel

Construction Time Log

Task	Start		Finish	
	Date	Time	Date	Time
Drilling	5/3/07	11:40	5/3/07	13:25
PVC	5/3/07	13:40	5/3/07	13:45
Sand Pack	5/3/07	13:45	5/3/07	14:57
Bent. Seal	5/3/07	14:57	5/3/07	15:07
Grout Seal	5/3/07	15:37	5/3/07	16:06
Protector	5/3/07	16:06	5/3/07	16:17

Well Design and Specifications

Basis: _____

Casing String(s): C = Casing, S = Screen

Depth	String(s)	Elevation
+2.7 - 28.6	C1	2459.0 - 2433.1
28.6 - 33.3	S1	2433.1 - 2428.4
33.3 - 33.7	C2	2428.4 - 2428.0
-	-	-
-	-	-
-	-	-

Well Development

Depth to water initial: 1.59 ft **final:** 1.8 ft
 Well developed with a pump on 5/17/07

Casing: C1 2-inch diam. Sch 40 PVC
 C2 2-inch diam. Sch 40 PVC
 Threaded end cap
Screen: S1 2-inch diam. Sch 40 PVC
 with 0.010-inch slots
 S2 _____

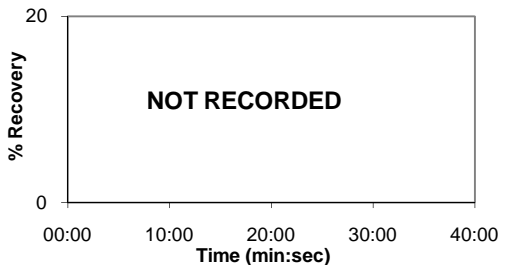
Stabilization Test Data

Time	pH	Spec. Cond.	Temp (°C)
1032	7.65	2.37 mS/cm	8.9
1043	7.64	2.40	9.1
1105	7.86	2.41	9.3
1133	7.68	2.44	9.5
1154	7.71	2.40	9.3

Sand Pack: 25.9 to 33.7 feet
 45/55 Red Flint Sand

Recovery Data

Approx. Q = -0.7 gal/min
 Approx. s = 0.21 ft



Grout Seal: 1 to 23.9 feet
 CETCO Volclay Grout 20% solids

Bentonite Seal: 23.9 to 25.9 feet
 Puregold Medium Chips (hydrated)

Comments Puregold bentonite chips (bentonite seal) placed from 23.9 to 25.9 feet were hydrated with water before placing grout.
 N/A indicates not applicable.

BOARD OF WATER WELL CONTRACTORS
 900 E. BOLLIVARD AVE., DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

SHO-01

SHC Identification

WELL DRILLER'S REPORT

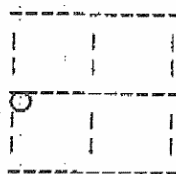
State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc
 Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION

West well 2A
139-98-17CBB

County Stark

SW1/4 NW1/4 NW1/4 Sec.17 Twp.139 N.Rge.98 W

3. PROPOSED USE Geothermal Monitoring
 Domestic Irrigation Industrial
 Stock Municipal Test Hole

4. METHOD DRILLED

Cable Reverse Rotary Bored
 Forward Rotary Jetted Auger
 If other, specify _____

5. WATER QUALITY

Was a water sample collected for:

Chemical analyses? Yes NoBacteriological Analyses? Yes No

If so, to what laboratory was it sent? _____

6. WELL CONSTRUCTION

Diameter of Hole 5 inches Depth 240 feet
 Casing: Steel Plastic Concrete
 Threaded Welded Other

If other, specify _____

Pipe Weight: Diameter: From: To:
 _____ lb/ft 2 inches +2.2 feet 217.5 feet
 _____ lb/ft 2 inches 227.5 feet 232.5 feet
 _____ lb/ft _____ inches _____ feet _____ feet

Was perforated pipe used? Yes No

Perforated pipe set from _____ ft to _____ feet

Was casing left open end? Yes NoWas a well screen installed? Yes NoMaterial PVC Diameter 2 inchesSlot Size 10 set from 217.5 feet to 227.5 feet

Slot Size _____ set from _____ feet to _____ feet

Was packer or seal used? Yes No

If so, what material Depth _____ ft

Type of well: Straight screen Gravel packed 20-40Depth grouted: From 0 To 207Grouting material: Cement Other XIf other explain: Bentonite ChipsWell head completion: Pitless unit12" above grade Other XIf other, specify 2.2' above gradeWas pump installed? yes NoWas well disinfected upon completion? yes No

WSIQ2\WDRPT01

7. WATER LEVEL

Static water level 139.7 feet below surface
 If flowing: closed-in pressure _____ psi
 GPM flow _____ through _____ inch pipe
 Controlled by: _____ Valve Reducers Other
 If other, specify _____

8. WELL TEST DATA

_____ Pump Bailer Other
 Pumping level below land surface
 _____ ft. after _____ hrs. pumping gpm
 _____ ft. after _____ hrs. pumping gpm
 _____ ft. after _____ hrs. pumping gpm

9. WELL LOG

Formation	Depth (Ft.)
Silt, yellowish brown, oxidized	To 10
Clay, yellowish brown, oxidized	15
Clay, brown, Shale	23
Rock	23.5
Shale, brownish gray	28
Shale, light gray	35
Lignite	37
Shale, gray w/lignite lenses	66
Lignite	72.5
Shale, gray	95.5
Lignite	97
Shale, gray, rock at 113	130
Sand, silty, gray	139
Lignite	156
Shale, gray	190
Shale, silty, gray	197
Sand, fine, silty	227
Sandstone rock	228
Sand, fine	233
Shale, green	240

(use separate sheet if necessary)

10. DATE COMPLETED 27 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

Yes No

if so, how? _____

12. REMARKS 400# of Abrasives Inc sand pack to 207', 625# bentonite chips to surface.

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name

Mohl Drilling, Inc.

Address

Beulah ND 58503

Certificate No.

105

BOARD OF WATER WELL CONTRACTORS
900 E. BOULEVARD AVE., DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

SHO-02

SHC Identification

WELL DRILLER'S REPORT

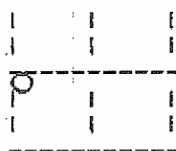
State law requires that this report be filed with the State Board of Water Well Contractors within 90 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc
Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION

Center well 2B
139-98-17CBB



County Stark
SW1/4 NW1/4 NW1/4 Sec.17 Twp.139 N.Rge.98 W

3. PROPOSED USE Geothermal Monitoring
Domestic Irrigation Industrial
Stock Municipal Test Hole

4. METHOD DRILLED

Cable Reverse Rotary Bored
 Forward Rotary Jettied Auger
If other, specify _____

5. WATER QUALITY

Was a water sample collected for:
Chemical analyses? Yes No
Bacteriological Analyses? Yes No
If so, to what laboratory was it sent?

6. WELL CONSTRUCTION

Diameter of Hole 5 5/8 inches Depth 158 feet
Casing: Steel Plastic Concrete
 Threaded welded Other

If other, specify _____
Pipe Weight: Diameter: From: To:
lb/ft 2 inches +2 feet 147 feet
lb/ft inches feet feet
lb/ft inches feet feet

Was perforated pipe used? Yes No
Perforated pipe set from ft to feet
Was casing left open end? Yes No
Was a well screen installed? Yes No
Material PVC Diameter 2 inches

Slot Size 10 set from 147 feet to 157 feet
Slot Size set from feet to feet
Was packet or seal used? Yes No
If so, what material Depth ft

Type of well: Straight screen Gravel packed 20-40
Depth grouted: From 0 To 142
Grouting material: Cement Other
If other explain: Bentonite Chips
Well head completion: Fittless unit _____
12" above grade Other
If other specify 2' above grade _____
Was pump installed? yes No
Was well disinfected upon completion? yes No

WSIQZ\WRPT01

7. WATER LEVEL

Static water level _____ Feet below surface
If flowing: closed-in pressure _____ psi
GPM flow _____ through _____ inch pipe
Controlled by: Valve Reducers Other
If other, specify _____

8. WELL TEST DATA

Pump Bailer Other
Pumping level below land surface
ft. after hrs. pumping gpm
ft. after hrs. pumping gpm
ft. after hrs. pumping gpm

9. WELL LOG

Formation	Depth(Ft.)
Silt, yellowish brown, oxidized	10
Clay, yellowish brown, oxidized	15
Clay, brown, Shale	23
Rock	23.5
Shale, brownish gray	28
Shale, light gray	35
Lignite	37
Shale, gray w/lignite lenses	66
Lignite	72.5
Shale, gray	95.5
Lignite	97
Shale, gray, rock at 113	130
Sand, silty, gray	139
Lignite	156
Shale, gray	158

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

Yes No
if so, how? _____

12. REMARKS 280# of Abrasives Inc sand
pack to 142', 1,400# bentonite chips
to 3', cuttings to surface.

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name MoHL Drilling, Inc Certificate No. 105
Address Beulah ND 58523

BOARD OF WATER WELL CONTRACTORS
900 E. BOULEVARD AVE, DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

SHO-03
SHC Identification

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc
Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION

East well 2C
139-98-17CBB

County Stark

SW1/4 NW1/4 NW1/4 Sec. 17 Twp. 139 N. Rge. 98 W

3. PROPOSED USE Geothermal Monitoring
Domestic Irrigation Industrial
Stock Municipal Test Hole

4. METHOD DRILLED

Cable Reverse Rotary Bored
 Forward Rotary Jettted Auger
If other, specify _____

5. WATER QUALITY

Was a water sample collected for:
Chemical analyses? Yes No
Bacteriological Analyses? Yes No
If so, to what laboratory was it sent?

6. WELL CONSTRUCTION

Diameter of Hole 5 inches Depth 73 feet
Casing: Steel Plastic Concrete
 Threaded welded Other

If other, specify _____
Pipe Weight: Diameter: From: To:
lb/ft 2 inches +2 feet 68 feet
lb/ft inches feet feet
lb/ft inches feet feet

Was perforated pipe used? Yes No
Perforated pipe set from _____ ft to _____ feet
Was casing left open end? Yes No
Was a well screen installed? Yes No

Material PVC Diameter 2 inches
Slot Size 10 set from 68 feet to 73 feet
Slot Size _____ set from _____ feet to _____ feet

Was packer or seal used? Yes No
If so, what material _____ Depth _____ ft

Type of well: Straight screen Gravel packed Other
Depth grouted: From 0 To ??

Grouting material: Cement Other
If other explain: Bentonite Chips

Well head completion: Pitless unit
12" above grade Other

If other, specify 2' above grade
Was pump installed? yes No

Was well disinfected upon completion? yes No
WSIQZ\WDRPT01

7. WATER LEVEL

Static water level _____ Feet below surface
If flowing: closed-in pressure _____ psi
GPM flow _____ through _____ inch pipe
Controlled by: _____ Valve _____ Reducers _____ Other
If other, specify _____

8. WELL TEST DATA

Pump Bailer Other
Pumping level below land surface
_____ ft. after _____ hrs. pumping _____ gpm
_____ ft. after _____ hrs. pumping _____ gpm
_____ ft. after _____ hrs. pumping _____ gpm

9. WELL LOG

Formation	Depth (Ft.)
Silt, yellowish brown, oxidized	10
Clay, yellowish brown, oxidized	15
Clay, brown, Shale	23
Rock	23.5
Shale, brownish gray	28
Shale, light gray	35
Lignite	37
Shale, gray w/lignite lenses	66
Lignite	72.5
Shale, gray	73

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

Yes No
if so, how? _____

12. REMARKS 120# of Abrasives Inc sand pack to ??', 450# bentonite chips to 2', cuttings to surface.

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name MoH2 Drilling Inc Certificate No. 105
Address Beulah ND 58502

BOARD OF WATER WELL CONTRACTORS
900 E. BOULEVARD AVE., DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

SHO-04

SHC Identification

WELL DRILLER'S REPORT

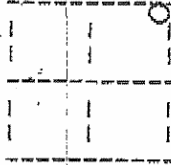
State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc
Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION

South well 11A
139-98-23AAA



County Stark
NE1/4 NE1/4 NE1/4 Sec.23 Twp.139 N.Rge.98 W

3. PROPOSED USE Geothermal Monitoring
Domestic Irrigation Industrial
Stock Municipal Test Hole

4. METHOD DRILLED

Cable Reverse Rotary Bored
 Forward Rotary Jetted Auger
If other, specify _____

5. WATER QUALITY

Was a water sample collected for:
Chemical analyses? Yes No
Bacteriological Analyses? Yes No
If so, to what laboratory was it sent? _____

6. WELL CONSTRUCTION

Diameter of Hole 5 inches Depth 195 feet
Casing: Steel Plastic Concrete
 Threaded Welded Other

If other, specify _____
Pipe Weight: Diameter: From: To:
lb/ft 2 inches +2 feet 175 feet
lb/ft 2 inches 185 feet 190 feet
lb/ft _____ inches _____ feet _____ feet

Was perforated pipe used? Yes No
Perforated pipe set from _____ ft to _____ feet
Was casing left open end? Yes No
Was a well screen installed? Yes No

Material PVC Diameter 2 inches
Slot Size 10 set from 175 feet to 185 feet
Slot Size _____ set from _____ feet to _____ feet

Was packer or seal used? Yes No
If so, what material _____ Depth _____ ft

Type of well: Straight screen Gravel packed
Depth grouted: From 0 To 173

Grouting material: Cement Other
If other explain: Bentonite Chips

Well head completion: Pitless unit _____
12" above grade Other

If other, specify 2' above grade _____
Was pump installed? Yes No

Was well disinfected upon completion? Yes No

WSIQ\WDRPT01

7. WATER LEVEL

Static water level _____ Feet below surface
If flowing: closed-in pressure _____ psi
GPM flow _____ through _____ inch pipe
Controlled by: _____ Valve _____ Reducers _____ Other _____
If other, specify _____

8. WELL TEST DATA

Pump _____ Sailer _____ Other _____
Pumping level below land surface
_____ ft. after _____ hrs. pumping _____ gpm
_____ ft. after _____ hrs. pumping _____ gpm
_____ ft. after _____ hrs. pumping _____ gpm

9. WELL LOG

Formation	Depth (Ft.)
	To
Clay, silty to sandy, yellowish brown, oxidized	10
Shale, yellowish brown, oxidized	18
Shale, silty, brown, w/ organics	21
Silt, sandy, gray	42
Sand, silty gray	48
Lignite	69.5
Shale, light gray	72
Lignite & brown organic shale	74
Silt, sandy, gray	76
Shale, silty, gray, lime rock at 100' & lignite at 108'	108
Shale, greenish gray	112
Shale, silty, gray	129
Sandstone	131
Shale, silty, gray	166
Shale, brown, organic	170
Shale, silty, gray w/lignite seam	172
Lignite	185
Shale, gray	195

(use separate sheet if necessary)

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

Yes No
if so, how? _____

12. REMARKS 1,240# of Abrasives Inc sand pack to 173', 550# bentonite chips to 3', cuttings to surface.

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name MoHL Drilling, Inc Certificate No. 105
Address _____

Beulah ND 58523

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BOARD OF WATER WELL CONTRACTORS
900 E. BOULEVARD AVE., DEPT. 770 " BISMARCK, NORTH DAKOTA 58505-0850

SHO-05
SHC Identification

WELL DRILLER'S REPORT

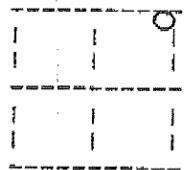
State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc
Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION

North well 11B
139-98-23AAA



County Stark
NE1/4 NE1/4 NE1/4 Sec.23 Twp.139 N.Rge.98 W

3. PROPOSED USE Geothermal Monitoring
Domestic Irrigation Industrial
Stock Municipal Test Hole

4. METHOD DRILLED

Cable Reverse Rotary Bored
 forward Rotary Jetted Auger
If other, specify _____

5. WATER QUALITY

Was a water sample collected for:
Chemical analyses? Yes No
Bacteriological Analyses? Yes No
If so, to what laboratory was it sent?

6. WELL CONSTRUCTION

Diameter of Hole 5 3/8 inches Depth 72 feet
Casing: Steel Plastic Concrete
 Threaded welded Other

If other, specify _____
Pipe Weight: Diameter: From: To:
lb/ft 2 inches +2 feet 60 feet
lb/ft inches feet feet
lb/ft inches feet feet

Was perforated pipe used? Yes No
Perforated pipe set from ft to feet
Was casing left open end? Yes No
Was a well screen installed? Yes No
Material PVC Diameter 2 inches

Slot Size 10 set from 60 feet to 70 feet
Slot Size feet to feet
Was packer or seal used? Yes No
If so, what material _____ Depth ft

Type of well: Straight screen Gravel packed
Depth grouted: From 0 to 46
Grouting material: Cement Other

If other explain: Bentonite Chips
Well head completion: Fittless unit _____
12" above grade Other

If other, specify 2' above grade
Was pump installed? yes No
Was well disinfected upon completion? yes No
WSIQZ\WDRPT01

7. WATER LEVEL

Static water level _____ Feet below surface
If flowing: closed-in pressure _____ psi
GPM flow _____ through _____ inch pipe
Controlled by: _____ Valve _____ Reducers _____ Other
If other, specify _____

8. WELL TEST DATA

_____ Pump _____ Bailer _____ Other
Pumping level below land surface
_____ ft. after _____ hrs. pumping _____ gpm
_____ ft. after _____ hrs. pumping _____ gpm
_____ ft. after _____ hrs. pumping _____ gpm

9. WELL LOG

Formation	Depth (Ft.)
Clay, silty to sandy, yellowish brown, oxidized	10
Shale, yellowish brown, oxidized	18
Shale, silty, brown, w/ organics	21
Silt, sandy, gray	42
Sand, silty gray	48
Lignite	69.5
Shale, light gray	72

(use separate sheet if necessary)

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

Yes No
if so, how? _____

12. REMARKS 240# of Abrasives Inc sand pack to 46', 300# bentonite chips to 3', cuttings to surface.

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name MoHL Drilling, Inc Certificate No. 105
Address Bellaire ND 58523

