WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 19C-LGIA-MW02
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 19C-LGIA-MW02

WELL CONSTRUCTION START DATE: 6/14/18
WELL CONSTRUCTION COMPLETE DATE: 6/18/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

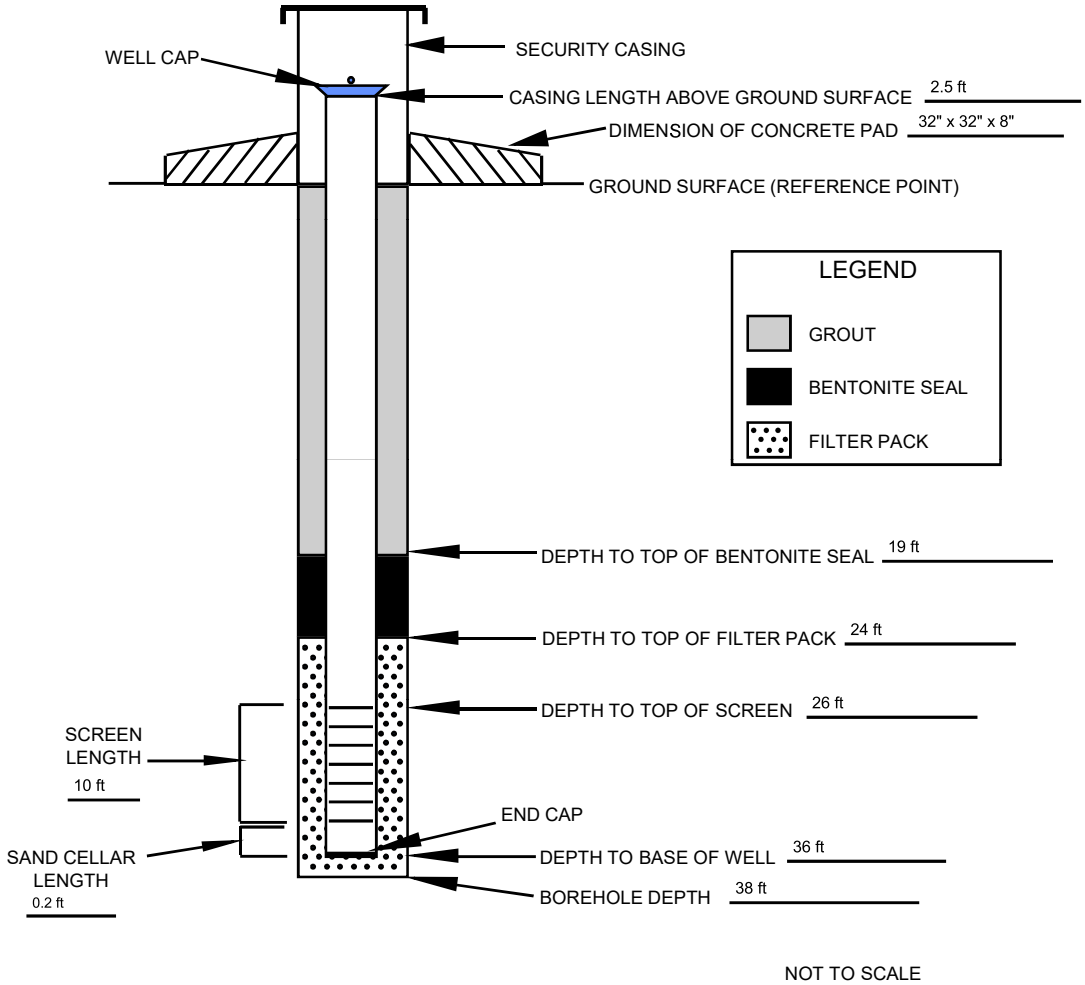
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 19C-UGIA-MW03
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 19C-UGIA-MW03

WELL CONSTRUCTION START DATE: 6/12/18
WELL CONSTRUCTION COMPLETE DATE: 6/18/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

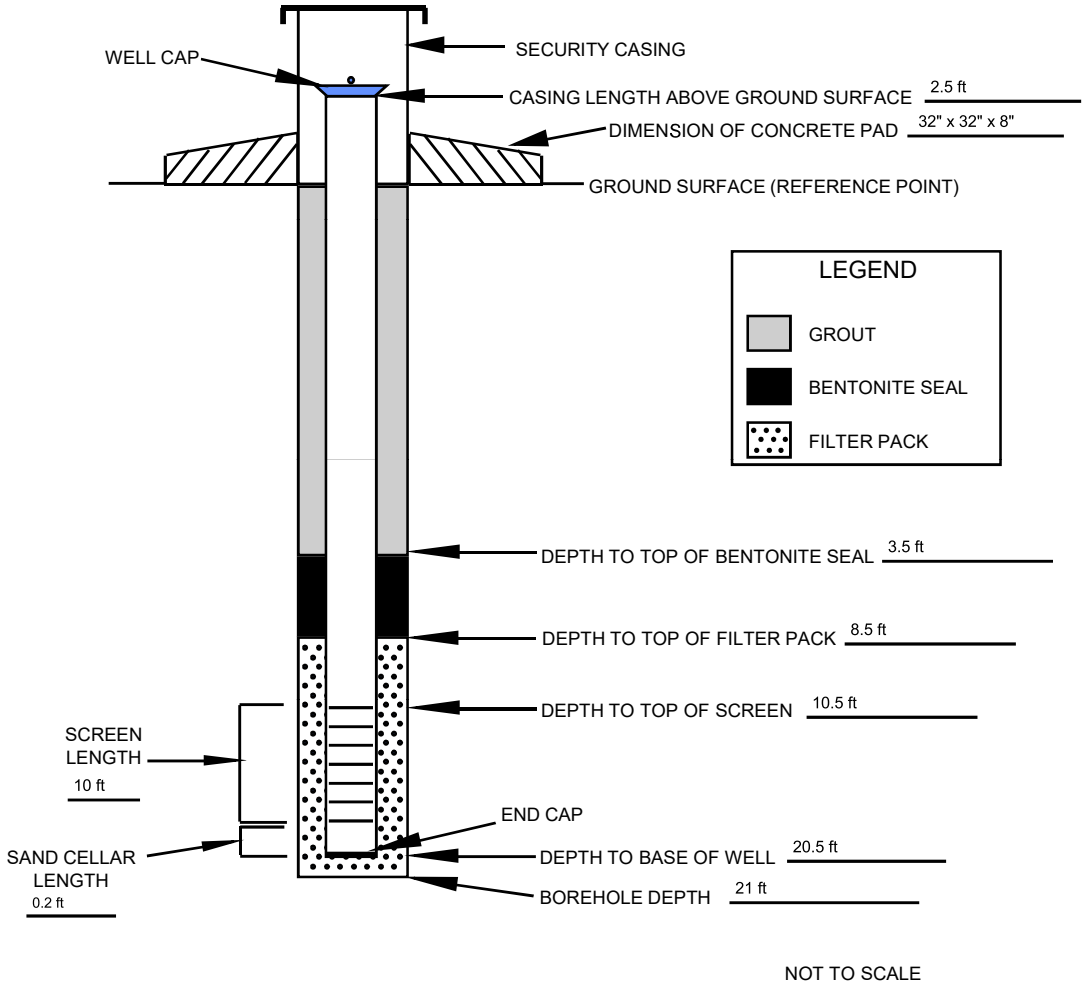
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 19C-LGIA-MW04
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 19C-LGIA-MW04

WELL CONSTRUCTION START DATE: 6/12/18
WELL CONSTRUCTION COMPLETE DATE: 6/18/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

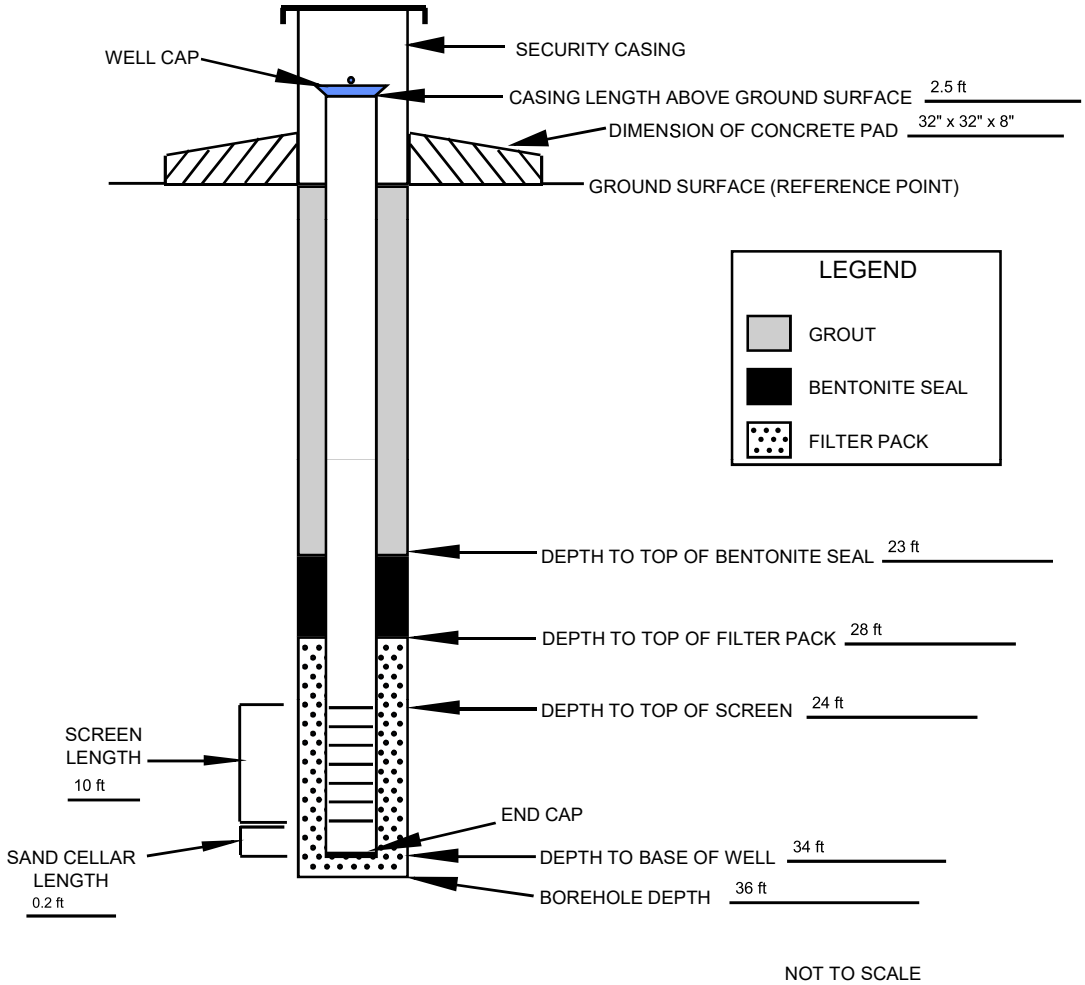
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 19C-UGIA-MW05
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 19C-GIA-MW05

WELL CONSTRUCTION START DATE: 6/13/18
WELL CONSTRUCTION COMPLETE DATE: 6/18/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

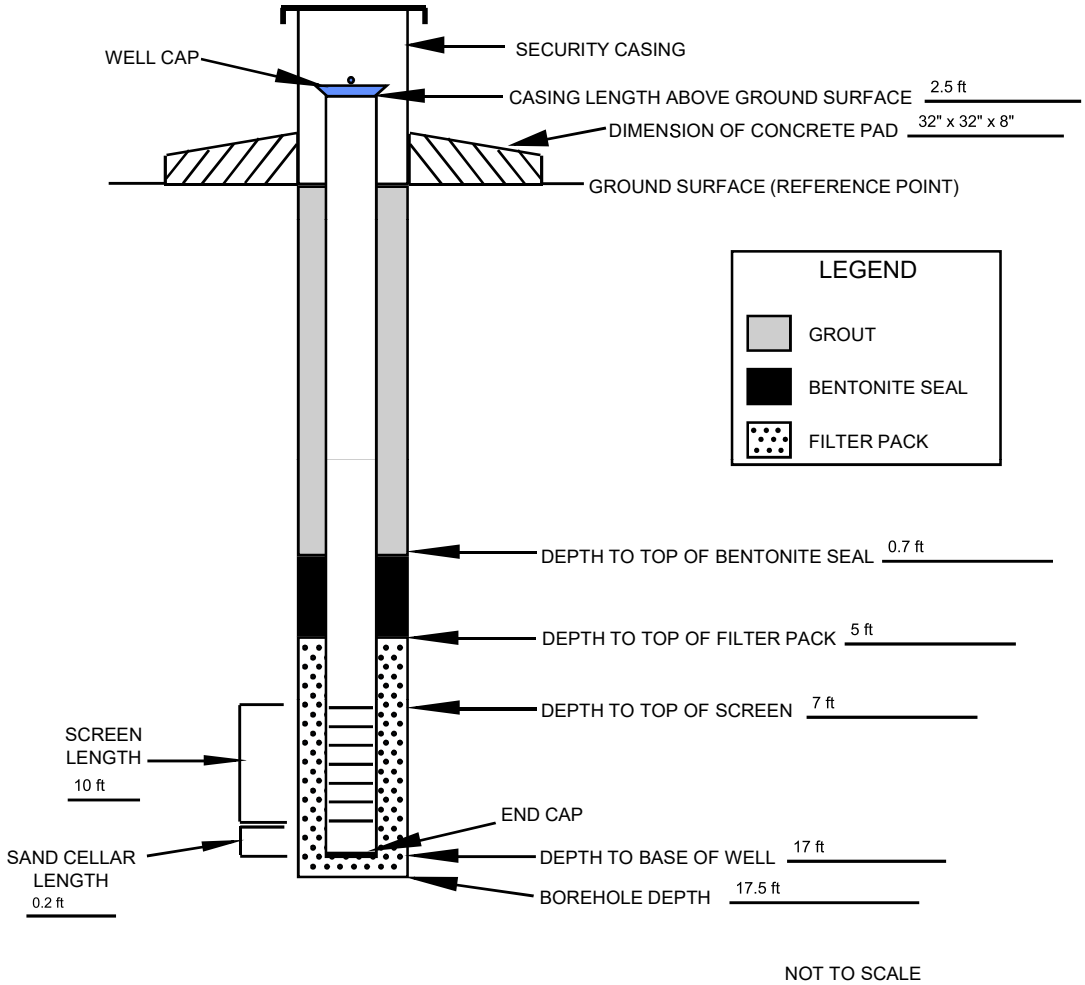
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 19C-LGIA-MW06
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 19C-LGIA-MW06

WELL CONSTRUCTION START DATE: 6/13/18
WELL CONSTRUCTION COMPLETE DATE: 6/18/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

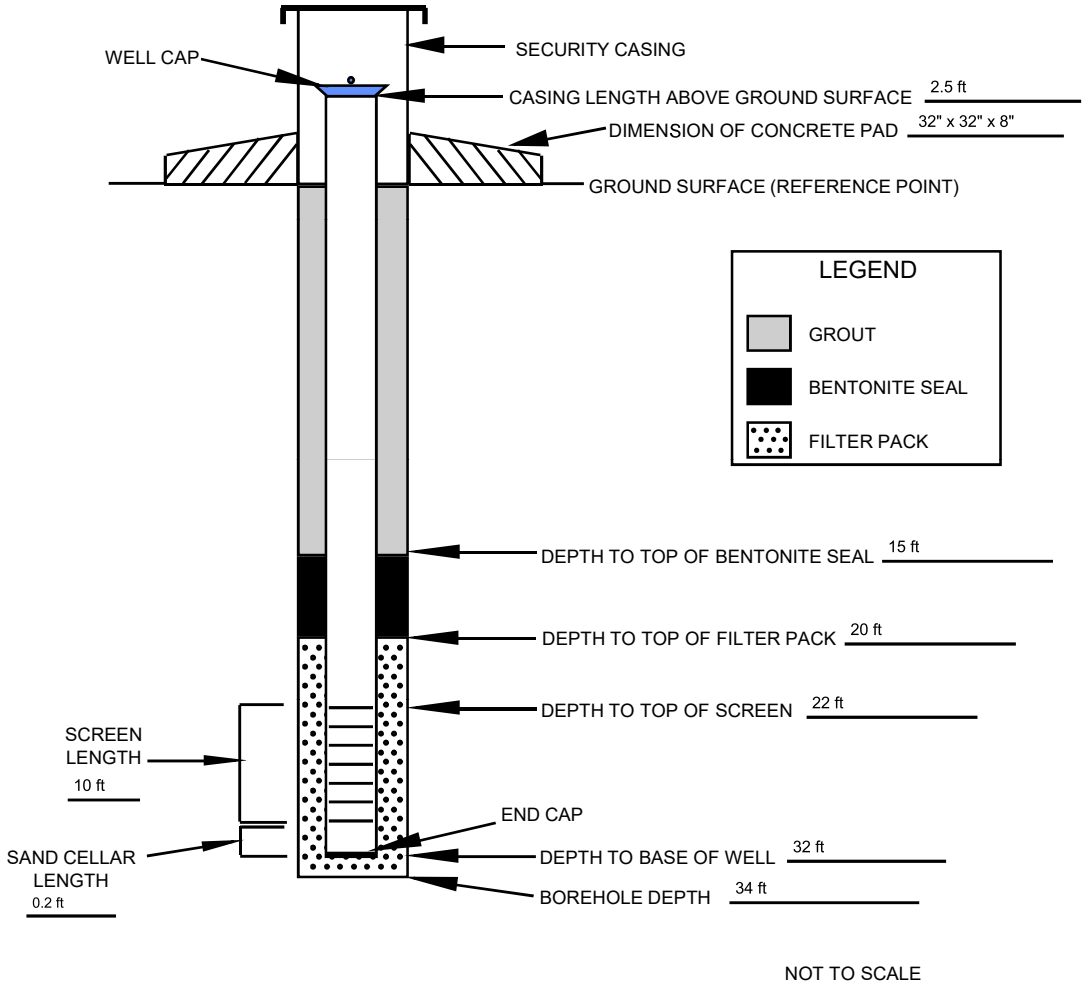
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 19C-LGIA-MW07
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 19C-LGIA-MW07

WELL CONSTRUCTION START DATE: 7/18/18
WELL CONSTRUCTION COMPLETE DATE:

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

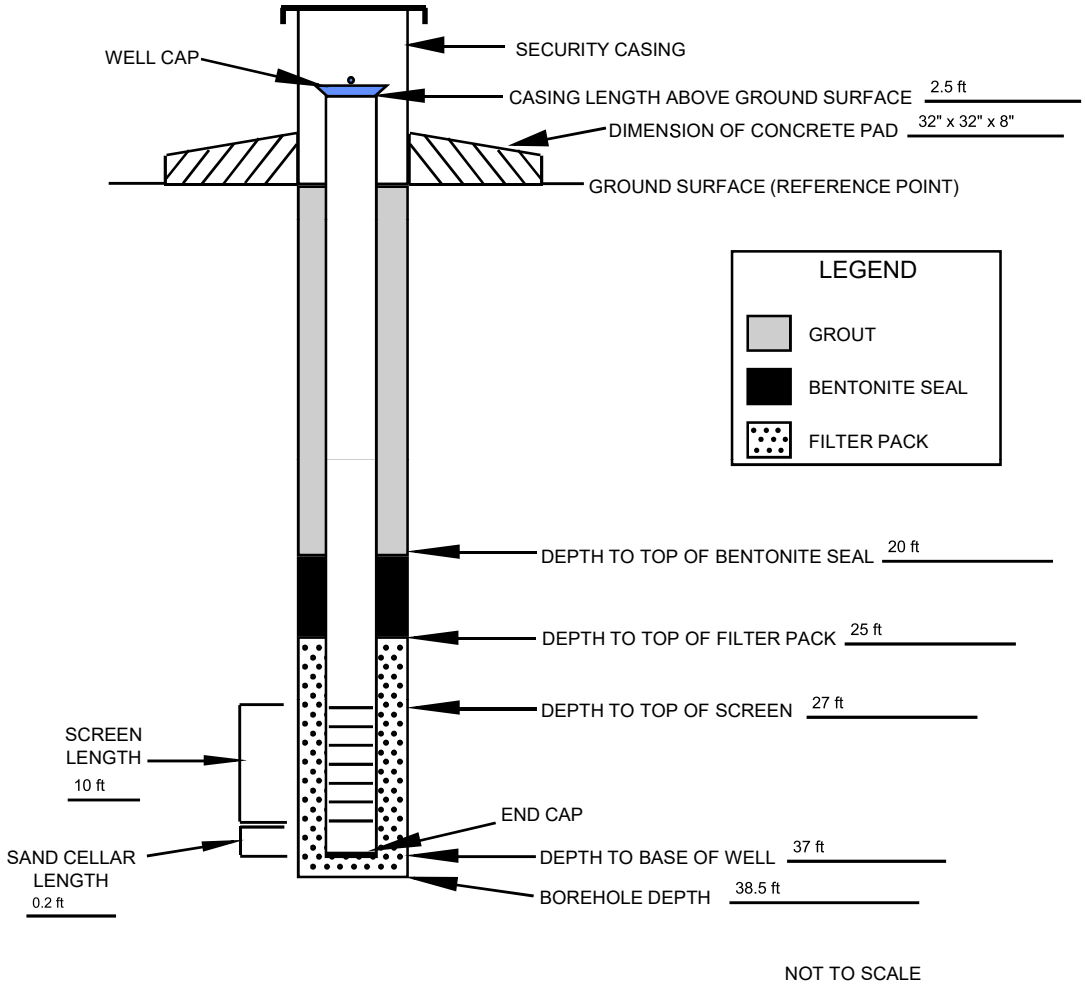
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B UGIA MW01
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-2-18

LOCATION: 20B-UGIA-MW01 DATE INSTALLED: 3-18-18

TOTAL DEPTH (FTOC) 21.85 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 21.83 ft.

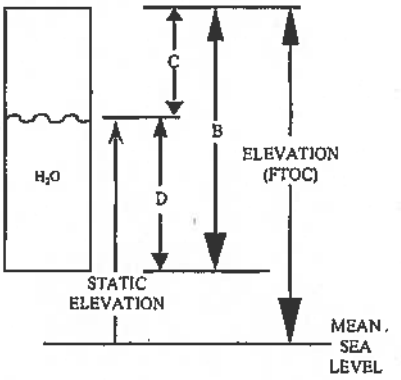
Measured Water Level Depth (C) 8.76 ft.

Length of Static Water Column (D) 21.83 (B) - 8.76 (C) = 13.07 ft.

Casing Water Volume .16 (A) x 13.07 (D) = 2.0912 gal

Total Purge Volume = 95 (gal)

Measured Well Depth After Development (B) 21.85 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
9:35	9.11	1gpm	5	5.76	1.611	8.76	15.5	
9:40	9.13	1gpm	10	6.17	1.601	8.58	19.6	
9:45	9.13	1gpm	15	6.25	1.599	8.52	3.40	
9:50	9.14	1gpm	20	6.30	1.513	8.42	8.01	Surged
9:55	9.16	1gpm	25	6.29	1.530	8.62	80.9	
10:00	9.17	1gpm	30	6.28	1.588	8.54	>1000	
10:05	8.98	1gpm	35	6.33	1.573	7.49	219	Surged
10:10	9.11	1gpm	40	6.26	1.572	7.68	690	
10:15	9.18	1gpm	45	6.29	1.576	8.05	428	Surged
10:20	9.17	1gpm	50	6.29	1.481	7.91	651	Surged
10:25	9.18	1gpm	55	6.31	1.576	7.93	652	

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

208-UGIA-

WELL/PIEZOMETER ID MW01

PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or fpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
10:30	9.18	1gpm	60	6.34	1.570	7.24	583	
10:35	9.17	1gpm	65	6.35	1.600	8.67	253	
10:40	9.17	1gpm	70	6.49	1.490	8.89	174	Surged
~~10:45~~								
11:20	8.94	1gpm	75	6.56	1.636	8.80	449	
11:25	8.99	1gpm	80	6.55	1.626	8.60	10.5	
11:30	9.14	1gpm	85	6.57	1.621	8.61	9.78	
11:35	9.12	1gpm	90	6.56	1.618	8.62	8.71	
11:40	9.11	1gpm	95	6.53	1.617	8.63	7.21	

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B LG1A MW02
PAGE 1 of 3

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-2-18

LOCATION: 20B LG1A-MW02 DATE INSTALLED: 3-18-18

TOTAL DEPTH (FTOC) 39.98 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 39.95 ft.

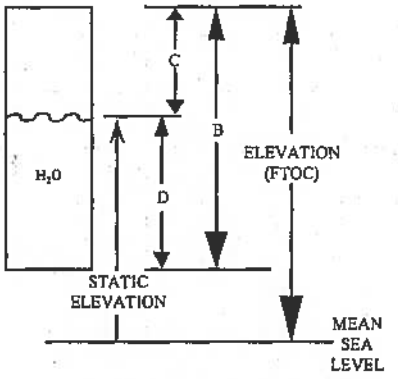
Measured Water Level Depth (C) 8.82 ft.

Length of Static Water Column (D) 39.95 (B) - 8.82 (C) = 31.13 ft. Pumping

Casing Water Volume .16 (A) x 31.13 (D) = 4.9808 gal

Total Purge Volume = 409.5 (gal)

Measured Well Depth After Development (B) 39.98 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
9:35	8.92	3.15gpm	15.75	6.88	1.633	9.74	63.3	
9:40	8.96	3.15	31.5	6.99	1.655	10.43	105	
9:45	8.98	3.15	47.25	6.99	1.668	10.61	51.7	
9:50	9.01	3.15	63	7.01	1.663	10.20	22.1	Surged
9:55	8.99	3.15	78.75	7.02	1.621	9.83	323	
10:00	8.98	3.15	94.5	7.03	1.584	9.16	>1000	
10:05	9.10	3.15	110.25	7.01	1.572	8.43	635	Surged
10:10	8.98	3.15	126	7.01	1.581	8.63	473	
10:15	8.98	3.15	141.75	7.01	1.692	10.92	605	Surged
10:20	8.99	3.15	157.5	7.00	1.670	10.89	306	Surged
10:25	8.98	3.15	173.25	7.01	1.672	11.03	509	

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 208 LLIA MW02

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. .(deg C)	Turbidity (NTU)	Notes
10:30	8.97	3.15 gpm	189	7.02	1.672	11.20	203	
10:35	8.98	3.15 gpm	204.75	7.02	1.674	11.27	49.1	
10:40	8.98	3.15 gpm	220.5	7.02	1.678	11.23	449	Surged
Surged + Pumped								
11:20	9.01	3.15	346.5	7.02	1.680	10.98	19.4	
11:25	8.99	3.15	362.25	7.03	1.673	10.93	258	
11:30	8.99	3.15	378	7.03	1.674	10.82	2.39	
11:35	8.99	3.15	393.75	7.03	1.674	10.91	4.63	
11:40	9.01	3.15	409.5	7.03	1.675	10.90	3.92	

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc

WELL/PIEZOMETER ID 2018 UG1A-MW03
PAGE _____ of _____

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-2-18

LOCATION: 208-UG1A-MW03 DATE INSTALLED: 3-19-18

TOTAL DEPTH (FTOC) 22.81 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.81 ft.

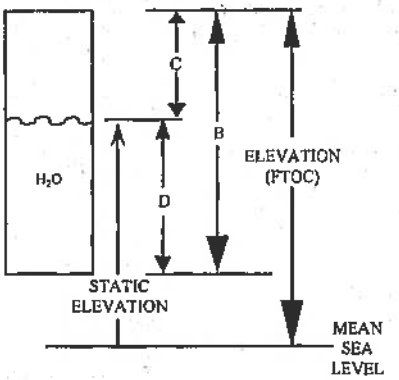
Measured Water Level Depth (C) 8.95 ft.

Length of Static Water Column (D) 22.81 (B) - 8.95 (C) = 13.86 ft. Pumping

Casing Water Volume .16 (A) x 13.86 (D) = 2.2176

Total Purge Volume = 110 (gal)

Measured Well Depth After Development (B) 22.81 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
12:20	8.95	1gpm	5	6.51	1.384	7.30	57.3	Surged
12:25	8.55	1gpm	10	6.55	1.462	9.24	>1000	
12:30	8.56	1gpm	15	6.70	1.487	9.22	516	
12:35	8.54	1gpm	20	6.72	1.478	8.94	271	
12:40	8.56	1gpm	25	6.73	1.493	9.45	95.7	
12:45	8.56	1gpm	30	6.80	1.509	9.63	79	Surged
12:50	8.55	1gpm	35	6.79	1.446	8.27	66.6	
12:55	8.56	1gpm	40	6.74	1.415	8.00	115	
13:00	8.57	1gpm	45	6.69	1.415	7.91	114	
13:05	8.59	1gpm	50	6.68	1.423	8.07	191	Surged
13:10	8.60	1gpm	55	6.69	1.420	8.26	199	

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 208-UGIA MW03

PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
13:15	8.59	1gpm	60	6.73	1.430	8.50	113	
13:20	8.59	1gpm	65	6.75	1.428	8.37	80	
13:25	8.59	1gpm	70	6.77	1.426	8.27	58.2	
13:30	8.59	1gpm	75	6.80	1.426	8.33	47	
13:35	8.60	1gpm	80	6.84	1.428	8.38	56	
13:40	8.58	1gpm	85	6.86	1.423	8.26	27.5	
13:45	8.58	1gpm	90	6.86	1.426	8.34	28.5	
13:50	8.57	1gpm	95	6.87	1.426	8.42	25.9	
13.55	8.57	1gpm	100	6.85	1.431	8.47	14.1	
14:00	8.57	1gpm	105	6.84	1.433	8.49	10.8	
14:05	8.57	1gpm	110	6.84	1.436	8.52	6.4	

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B LGIA-MW04
PAGE 2 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-2-18

LOCATION: 20B-LGIA-MW04 DATE INSTALLED: 3-19-18

TOTAL DEPTH (FTOC) 40.85 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 40.85 ft.

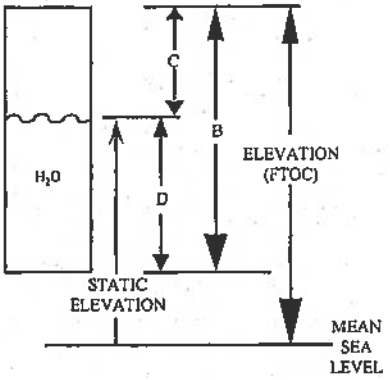
Measured Water Level Depth (C) 8.95 ft.

Length of Static Water Column (D) 40.85 (B) - 8.95 (C) = 31.9 ft. Pumping

Casing Water Volume .16 (A) x 31.9 (D) = 5.104 gal

Total Purge Volume = 236.25 (gal)

Measured Well Depth After Development (B) 40.85 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
12:20	8.95	3.15gpm	15.75	7.04	1.682	7.04	71000	Surged
12:25	8.57	3.15gpm	31.5	7.05	1.679	10.76	411	
12:30	8.68	3.15gpm	47.25	7.05	1.646	10.01	292	
12:35	8.55	3.15gpm	63	7.04	1.623	9.38	120	
12:40	8.56	3.15gpm	78.75	7.04	1.662	10.24	32.1	
12:45	8.56	3.15gpm	94.5	7.05	1.695	11.16	22.3	Surged
12:50	8.54	3.15gpm	110.25	7.08	1.686	10.98	341	
12:55	8.54	3.15gpm	126	7.08	1.686	11.01	134	
13:00	8.55	3.15gpm	141.75	7.08	1.688	11.06	53.1	
13:05	8.59	3.15gpm	157.5	7.09	1.687	11.18	71000	Surged
13:10	8.59	3.15gpm	173.25	7.10	1.702	11.30	258	

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 208-LGIA-MW04
PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
13:15	8.58	3.15 gpm	189	7.14	1.704	11.42	24.7	
13:20	8.58	3.15 gpm	204.75	7.12	1.707	11.43	5.38	
~~13:25~~ ok	8.58	3.15 gpm	220.5	7.10	1.708	11.43	6.21	
~~13:30~~ ok	8.58	3.15 gpm	236.25	7.09	1.709	11.44	4.16	

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc. Exceeding Expectations

WELL/PIEZOMETER ID 20B UG1A MW05
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-2-18

LOCATION: 20B-UG1A-MW05 DATE INSTALLED: 3-15-18

TOTAL DEPTH (FTOC) 22.56 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter 2" Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.56 ft.

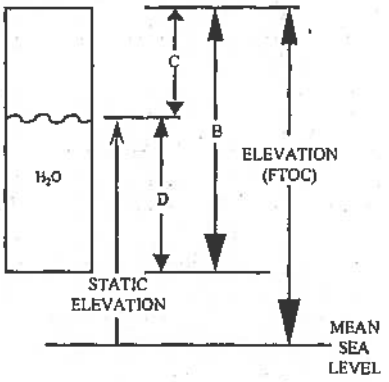
Measured Water Level Depth (C) 8.11 ft.

Length of Static Water Column (D) 22.56 (B) - 8.11 (C) = 14.45 ft. Pumping

Casing Water Volume .16 (A) x 14.45 (D) = 2.312 gal

Total Purge Volume = 95 (gal)

Measured Well Depth After Development (B) 22.56 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
14:45	8.25	1gpm	5	6.78	2.157	10.43	24.0	
14:50	8.31	1	10	6.78	2.227	10.59	77.8	Surged
14:55	9.27	1	15	6.75	2.169	9.97	209	Surged
15:00	8.26	1	20	6.75	2.184	10.20	>1000	
15:05	8.25	1	25	6.76	2.247	10.70	359	
15:10	8.26	1	30	6.78	2.254	10.80	109	
15:15	8.28	1	35	6.79	2.274	10.91	81.4	Surged
15:20	8.25	1	40	6.77	2.199	10.47	>1000	
15:25	8.23	1	45	6.77	2.263	11.09	448	
15:30	8.24	1	50	6.79	2.273	11.30	105	
15:35	8.24	1	55	6.82	2.290	11:17	56.9	

HGL HydroGeoLogic, Inc

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 20B UGFA MW05

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
15:40	8.23	1gpm	60	6.82	2.276	11.00	49.5	
15:45	8.23	1gpm	65	6.81	2.276	11.09	38.1	
15:50	8.21	1gpm	70	6.80	2.274	10.99	30.6	
15:55	8.21	1gpm	75	6.78	2.274	10.98	20.5	
16:00	8.21	1gpm	80	6.76	2.274	10.97	11.6	
16:05	8.20	1gpm	85	6.75	2.273	10.96	12.7	
16:10	8.22	1gpm	90	6.74	2.272	10.95	10.4	
16.15	8.21	1gpm	95	6.74	2.272	10.94	9.5	

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B LG1A MW06
PAGE _____ of _____

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-2-18

LOCATION: 20B-LG1A-MW06 DATE INSTALLED: 3-14-18

TOTAL DEPTH (FTOC) 38.79 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 38.79 ft.

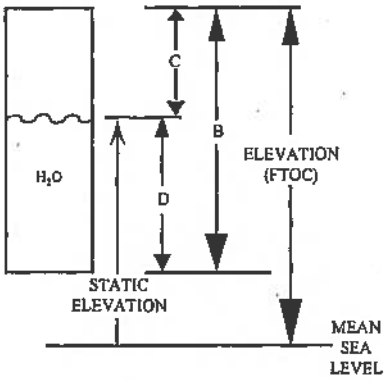
Measured Water Level Depth (C) 8.01 ft.

Length of Static Water Column (D) 38.79 (B) - 8.01 (C) = 30.78 ft. Pumping

Casing Water Volume .16 (A) x 30.78 (D) = 4.9248

Total Purge Volume = 220.5 (gal)

Measured Well Depth After Development (B) 38.79 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
14:45	8.18	3.15 gpm	15.75	7.01	1.676	11.56	>1000	Surged
14:50	8.15	3.15	31.5	7.02	1.685	11.60	>1000	Surged
14:55	8.13	3.15	47.25	7.02	1.694	11.73	687	
15:00	8.14	3.15	63	7.03	1.704	12.00	98.2	
15:05	8.13	3.15	78.75	7.02	1.714	12.26	21.1	
15:10	8.14	3.15	94.5	7.01	1.697	11.85	>1000	Surged
15:15	8.15	3.15	110.25	7.01	1.709	12.03	>1000	
15:20	8.13	3.15	126	7.01	1.715	12.27	231	
15:25	8.14	3.15	141.75	7.00	1.719	12.36	30.5	
15:30	8.12	3.15	157.5	7.00	1.720	12.37	30.5	
15:35	8.13	3.15	173.25	6.99	1.719	12.39	6.88	

HGL HydroGeoLogic, Inc — Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

208-LGIA

WELL/PIEZOMETER ID MW06

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
15:40	8.12	3.15 gpm	189.0	6.99	1.719	12.41	10.11	
15:45	8.13	3.15 gpm	204.75	6.98	1.718	12.41	11.73	
15:50	8.13	3.15 gpm	220.5	6.97	1.718	12.42	9.42	

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID UGSA-MW-07
PAGE 1 of 2

PROJECT NAME: CHAAD PROJECT NO.: AT3001 DATE: 3.21.18

LOCATION: Tract 20B DATE INSTALLED: 3.16.18

TOTAL DEPTH (FTOC) 22.7 CASING DIAMETER 2" Schedule 40

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL Top of Casing

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe pump is placed in clean bucket and cycled Alconox/DI

EQUIPMENT NUMBERS:

pH Meter 55972 YSI EC Meter — Thermometer — Turbidity Meter UG916X

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 25.44 ft.

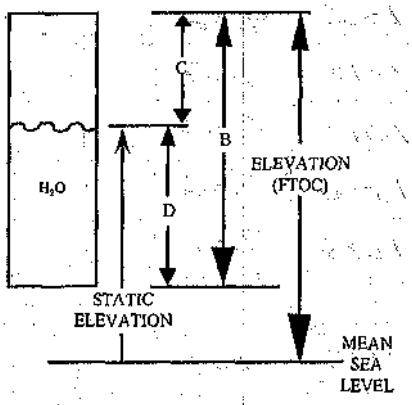
Measured Water Level Depth (C) 8.90 ft.

Length of Static Water Column (D) 25.44 (B) − 8.90 (C) = 16.54 ft. Pumping

Casing Water Volume .16 (A) × 16.54 (D) = 2.64 gal 20 gal used for boring

Total Purge Volume = 3325 (gal)

Measured Well Depth After Development (B) 25.45 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes	Orp
830	9.12	2 gpm	0	5.84	2.253	11.10	117		83.5
835	9.11		10	5.99	2.300	11.00	7.68		9.0
840	9.08		1530	5.91	2.286	11.07	228	Surged	-8.3
845	9.10		2030	5.92	2.217	10.78	157	Surged	-19.5
850	9.09		2540	5.97	2.425	10.81	182		-25.8
855	9.09		3050	6.06	2.253	10.89	61.9	Surged	-33.1
900	9.06		3560	6.13	2.475	11.07	650		-37.8
905	9.08		4070	6.21	2.290	11.08	17.2		-43.5
910	9.08		4580	6.29	2.292	11.07	320	Surged	-50.0
915	9.08		5090	6.35	2.225	11.13	39.8		-54.1
920	9.08		5500	6.39	2.214	11.15	22.9	Surged	-55.6

AH

180

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID MW-07

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH ~.02	Cond. (mS/cm 10%	Temp. (deg C) 10%	Turbidity (NTU) <25	Notes	O.P
925	9.07	~6gpm	~~60~~ 110 120	6.42	2.169	10.93	542	Surged	-52.4
930	9.08	2.5 gpm	~~117.5~~ 135	6.42	2.215	11.06	584	Surged	-52.6
935	9.09		135	6.41	2.442	11.05	548		-43.6
940	9.03		152.5	6.48	2.254	11.02	7.44	Surged	-47.9
945	9.03		170	6.54	2.265	11.14	213		-48.6
950	9.04		~~187.5~~	6.58	2.225	11.02	5.16	Surged	-53.2
955	9.05		195	6.58	2.273	11.24	134	Surged	-57.3
1000	9.06		107.5	6.58	2.244	11.19	101		-59.0
1005	9.06		120	6.59	3.023	11.62	24.2	Surged	-60.9
1010	9.07		132.5	6.63	2.695	11.65	433	Surged	-61.7
1015	9.07		145	6.67	2.284	11.63	83.3	Surged	-60.0
1020	9.06		~~157.5~~ 157.5 ~~175~~	6.68	2.356	11.77	331 110 NM		-61.9 ~~-61.7~~ NM
1025	9.07		170	6.71	2.310	11.57	373		-64.2
	- Surged & pumped during break								
1215	9.07		295	6.96	2.475	13.99	51.5	-84.4 →	
1220	9.06		307.5	6.64	2.339	12.50	50.0		-68.0
1225	9.07		320	6.65	2.346	12.52	48.7	Surged	-69.1
1230	9.06		332.5	6.66	2.349	12.51	49.8	Surged	-68.9
	- ~~Dave~~ AM Nelson says		to finish dev. after 4 hrs / stable readings, even w/ >25 NTU turbs @ 20 ft B - MW-07						

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID LG14-MW08
PAGE 1 of 2

PROJECT NAME: CHAAD PROJECT NO.: AT3001 DATE: 3.21.18

LOCATION: Tract 20B DATE INSTALLED: 3.15.18

TOTAL DEPTH (FTOC) _____ CASING DIAMETER 2" Schedule 40

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL Below Toc

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe _____

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe pump is placed in decon bucket and cycled Alconox/DI

EQUIPMENT NUMBERS:

pH Meter 559772 YSI EC Meter — Thermometer — Turbidity Meter UC9116X

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 39.50 ft.

Measured Water Level Depth (C) 8.79 ft.

Length of Static Water Column (D) 39.5 (B) - 8.79 (C) = 30.71 ft.

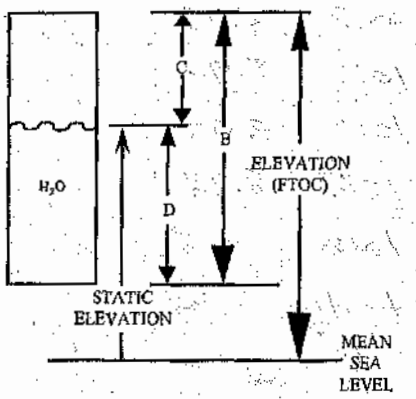
Pumping

Casing Water Volume 30.71 (A) x .16 (D) = 4.91 gal

100 gal used for boring

Total Purge Volume = 337.5 (gal)

Measured Well Depth After Development (B) AH 337 39.70 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes	ORP
833	8.95	2gpm	0	6.04	2.277	11.40	37.6		37.1
838	8.95		10	5.99	2.272	11.43	>2000	Surged	3.4
843	8.95		20	5.92	2.259	11.65	232		-11.8
848	8.91		30	5.93	2.284	11.33	86.3		
853	8.85		40	6.01	2.280	11.57	340	Surged	-31.6
858	8.91		50	6.08	2.298	11.59	135	Surged	-37.1
903	~~8.97~~ 8.91		60	6.15	2.311	11.57	33.7		-38.4
908	8.93		70	6.28	2.279	11.62	4.21		-49.3
913	8.92		80	6.32	2.263	11.59	58.1	Surged	-51.2
918	8.91		90	6.39	2.252	11.67	8.35		-53.4
923	8.92	↓	100	6.40	2.254	11.66	2.65		-54.6

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID: MW08

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	ORP ~~Notes~~	
928	8.91	2gpm	~~57~~ 110	6.44	2.247	11.66	137	-48.7	Surged
933	8.93	2.5gpm	112.5	6.49	2.243	11.62	62.9	-37.6	
938	8.91	2.5gpm	135	6.49	2.288	11.04	123	-42.1	Surged
943	8.92		152.5	6.55	2.276	11.67	8.74	-39.0	
948	8.92		170	6.55	2.271	11.76	4.48	-50.2	Surged
953	8.93		182.5	6.57	2.272	11.69	43.2	-53.5	Surged
958	8.93		195	6.59	2.354	12.21	25.9	-55.3	
1003	8.93		107.5	6.60	2.349	12.25	2.23	-60.1	Surged
1008	8.93		120	6.65	2.345	12.34	1.76	-56.6	
1013	8.94		132.5	6.70	2.419	12.16	17.0	-58.0	Surged
1018	8.93		145	6.72	2.344	12.20	110	-59.9	Surged
1023	8.94		152.5	6.73	2.315	12.37	62.3	-63.3	
~~1028~~	– Took break from readings – Continued pump/surge								
~~1031~~ 1115	8.94		287.5	7.09	2.365	13.02	13.0	-85.9	
1120	8.94		300	6.80	3.094	12.72	15.2	-72.8	Surged
1125	8.94		312.5	6.71	2.335	12.54	2.48	-68.1	
1130	8.94		325	6.70	2.300	12.52	2.89	-65.0	Surged
1135	8.94		337.5	6.69	2.312	12.56	2.53	-63.2	Surged

End of Dev 09 Tract 20B - MW08

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B-UGIA-MW09
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7/22/18

LOCATION: Tract 20B DATE INSTALLED: 7/17/18

TOTAL DEPTH (FTOC) 22.68 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe _____

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Pump decontaminated prior to use.

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.68 ft.

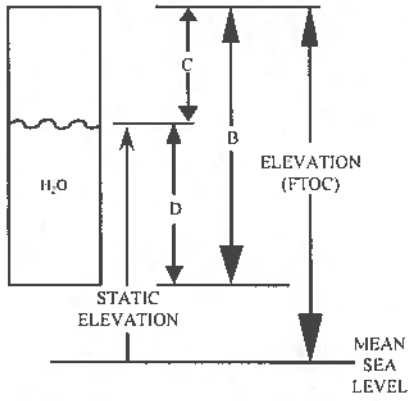
Measured Water Level Depth (C) 10.42 ft.

Length of Static Water Column (D) 22.68 (B) - 10.42 (C) = 12.26 ft. Pumping

Casing Water Volume 0.16 (A) x 12.26 (D) = 1.96 gal

Total Purge Volume = ~~36.78~~ SAP 47.3 (gal)

Measured Well Depth After Development (B) 22.68 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1155	10.42		- Surged vigorously throughout screen interval					
12:35	10.50	0.8 lpm	SAP ~~4.33~~ 24.4	6.74	1.451	11.33	30	
12:40	10.48	0.8 lpm	SAP ~~8.66~~ 28.7	6.72	1.447	11.27	23.9	
12:45	10.48	0.8 lpm	SAP ~~12.99~~ 33	6.72	1.445	11.39	17.3	
12:50	10.50	0.8 lpm	~~17.32~~ 47.3	6.77	1.451	11.50	17.5	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B-UG1A-MW10
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-22-18

LOCATION: 20B-UG1A-MW10 DATE INSTALLED: 7-16-18

TOTAL DEPTH (FTOC) 22.85 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.8ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.85 ft.

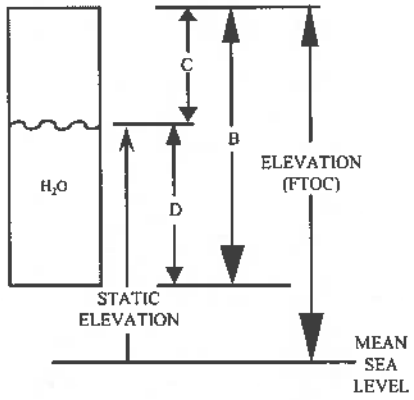
Measured Water Level Depth (C) 10.92 ft.

Length of Static Water Column (D) 22.85 (B) - 10.92 (C) = 11.93 ft. Pumping

Casing Water Volume .16 (A) x 11.93 (D) = 1.908 gal

Total Purge Volume = ~~SPG 32.75~~ (gal) 183.4

Measured Well Depth After Development (B) 10.92 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
9:20	10.92	Surged Vigorously throughout screened interval						
11:20	10.90	1.31 gpm	~~6.55~~ 157.2	7.21	1.998	12.87	26	
11:25	10.90	1.31 gpm	~~13.1~~ 163.75	7.21	1.998	12.83	19	
11:30	10.91	1.31 gpm	~~19.65~~ 170.3	7.21	1.995	12.83	18	
11:35	10.91	1.31 gpm	~~26.2~~ 176.85	7.22	1.991	12.80	15	
11:40	10.92	1.31 gpm	~~32.75~~ 183.4	7.22	1.991	12.79	11	

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 20B-UGIA-MW11
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7/22/18

LOCATION: Tract 20B DATE INSTALLED: 7/17/18

TOTAL DEPTH (FTOC) 22.33 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing [✓ Pumping] [✓ Surge] ☐ Describe ______

Equipment decontaminated prior to development [✓ Yes] ☐ No

Describe Pump decontaminated prior to use

EQUIPMENT NUMBERS:

pH Meter ______ EC Meter ______ Thermometer ______ Turbidity Meter ______

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.33 ft.

Measured Water Level Depth (C) 10.81 ft.

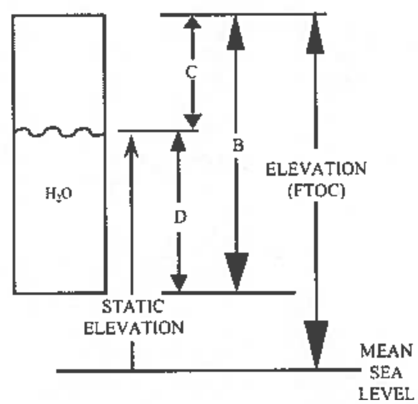
Length of Static Water Column (D) 22.33 (B) - 10.81 (C) = 11.52 ft.

Pumping

Casing Water Volume 0.16 (A) x 11.52 (D) = 1.84 gal

Total Purge Volume = SAC ~~1.84~~ 86.5 gal (gal)

Measured Well Depth After Development (B) 22.33 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
09:35	10.81	0.86	—	—	—	—	—	Surging
Surged vigorously thoughout screened interval								
10:45	11.08	0.86	60.7	6.55	0.816	11.96	83.1	
10:50	11.08	0.86	65	6.61	0.820	11.87	73.6	
10:55	11.08	0.86	69.3	6.76	0.824	11.83	67.4	
11:00	11.08	0.86	73.6	6.83	0.828	11.82	28.4	
11:05	11.08	0.86	77.9	6.85	0.834	11.85	22.4	
11:10	11.08	0.86	82.2	6.86	0.839	11.86	15.6	
11:15	11.08	0.86	86.5	6.87	0.840	11.87	11.3	

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW01
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW01

WELL CONSTRUCTION START DATE: 3/18/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

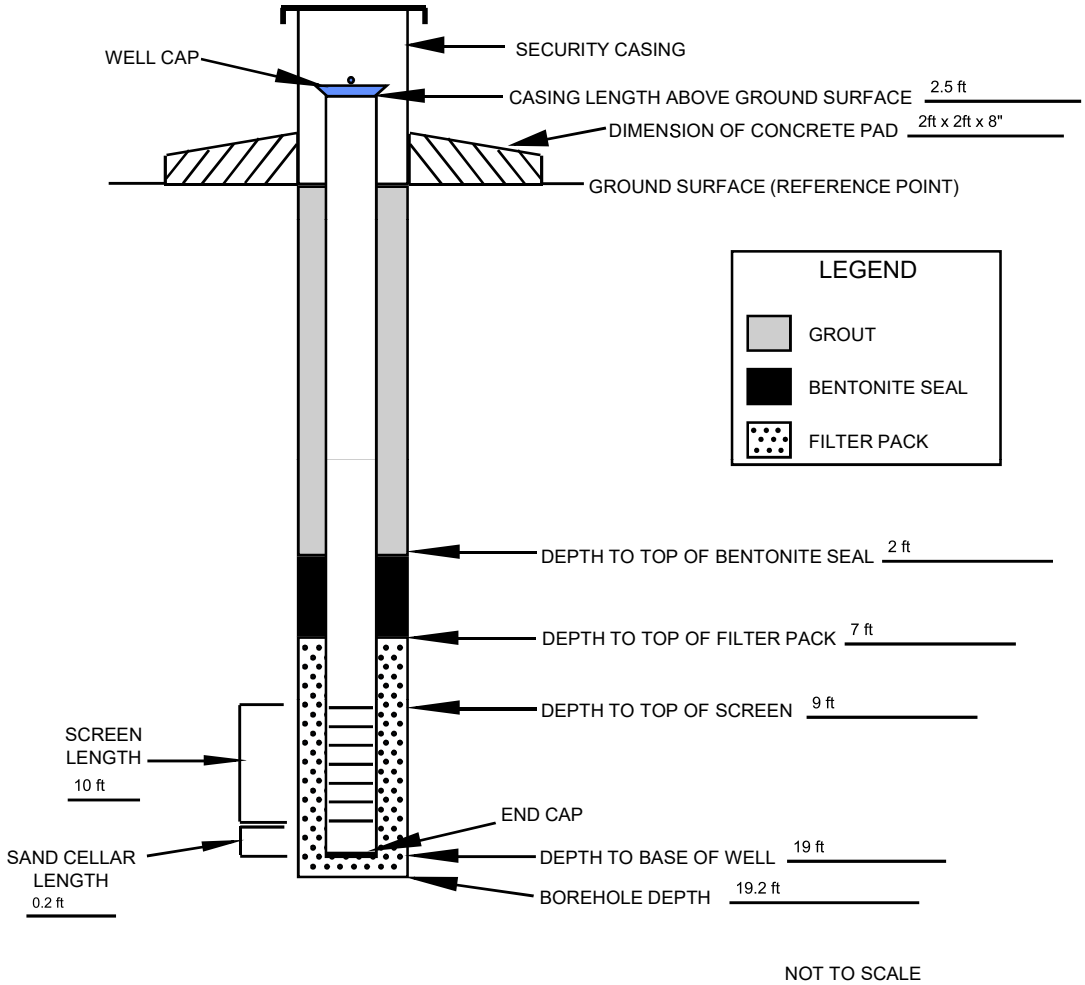
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-LGIA-MW02
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-LGIA-MW02

WELL CONSTRUCTION START DATE: 3/18/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

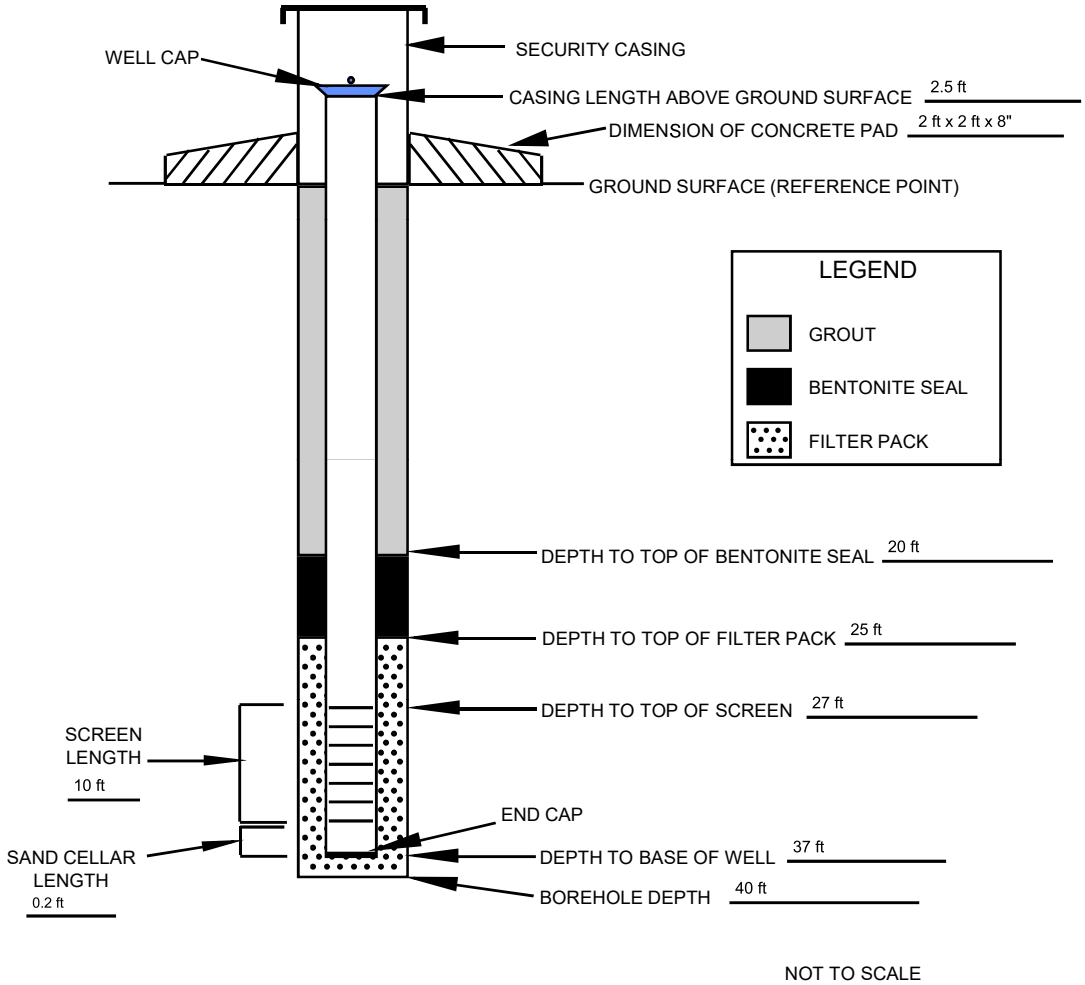
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW03
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW03

WELL CONSTRUCTION START DATE: 3/19/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

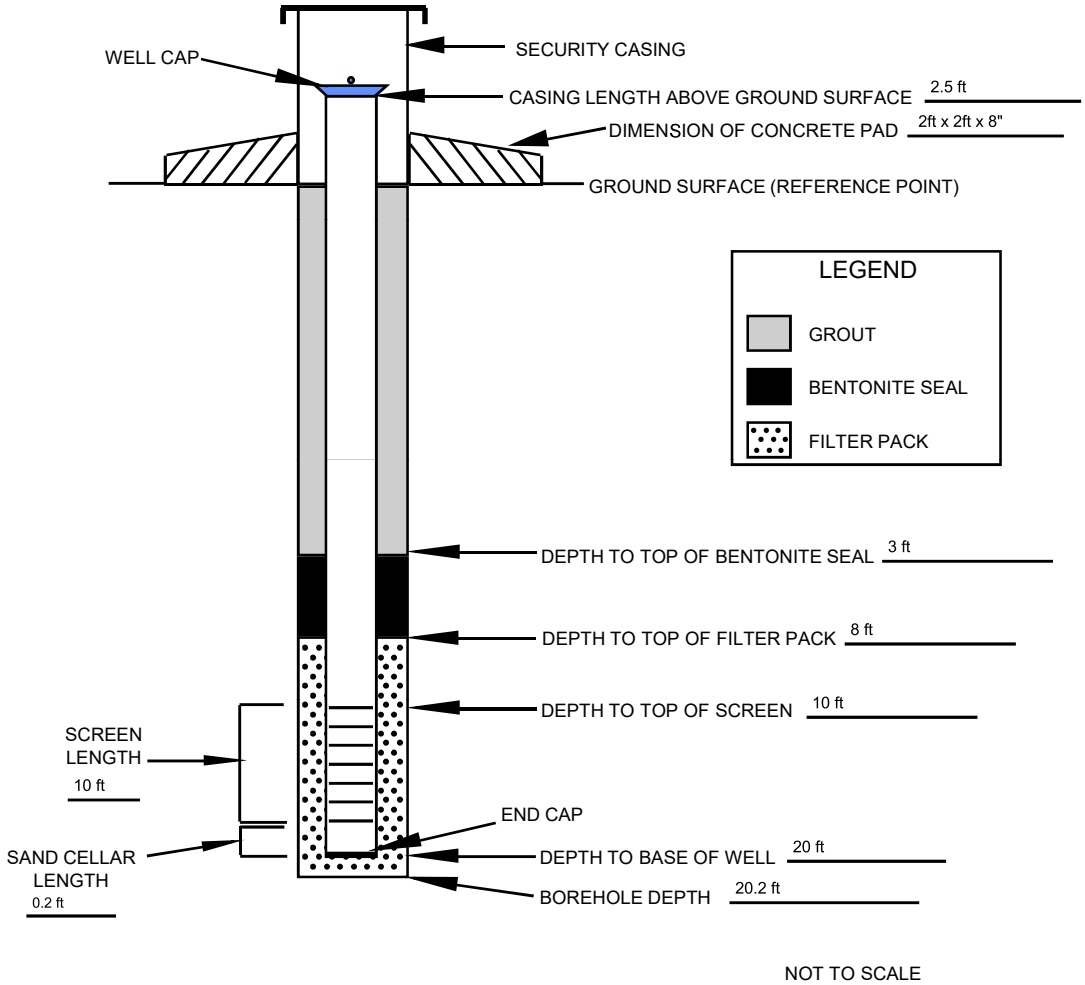
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-LGIA-MW04
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-LGIA-MW04

WELL CONSTRUCTION START DATE: 3/19/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

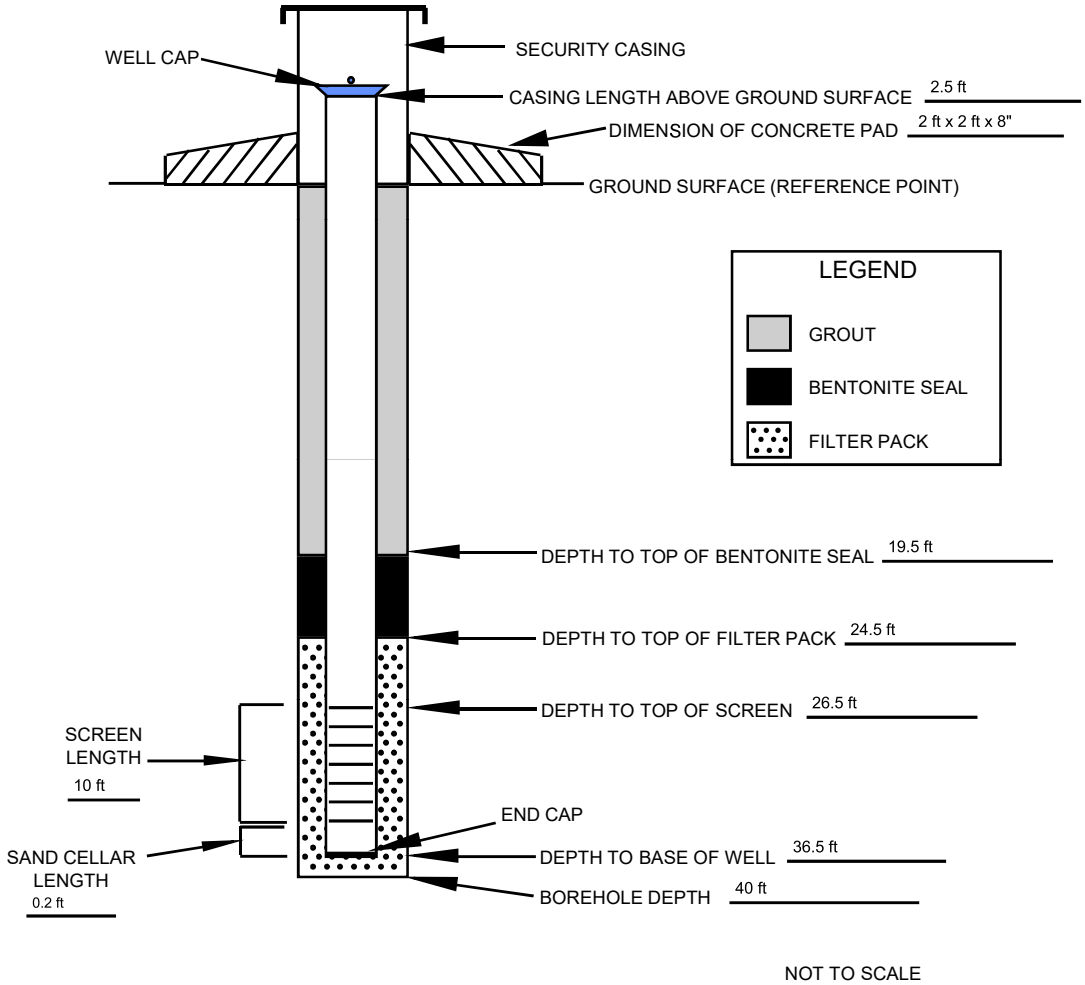
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW05
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW05

WELL CONSTRUCTION START DATE: 3/15/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

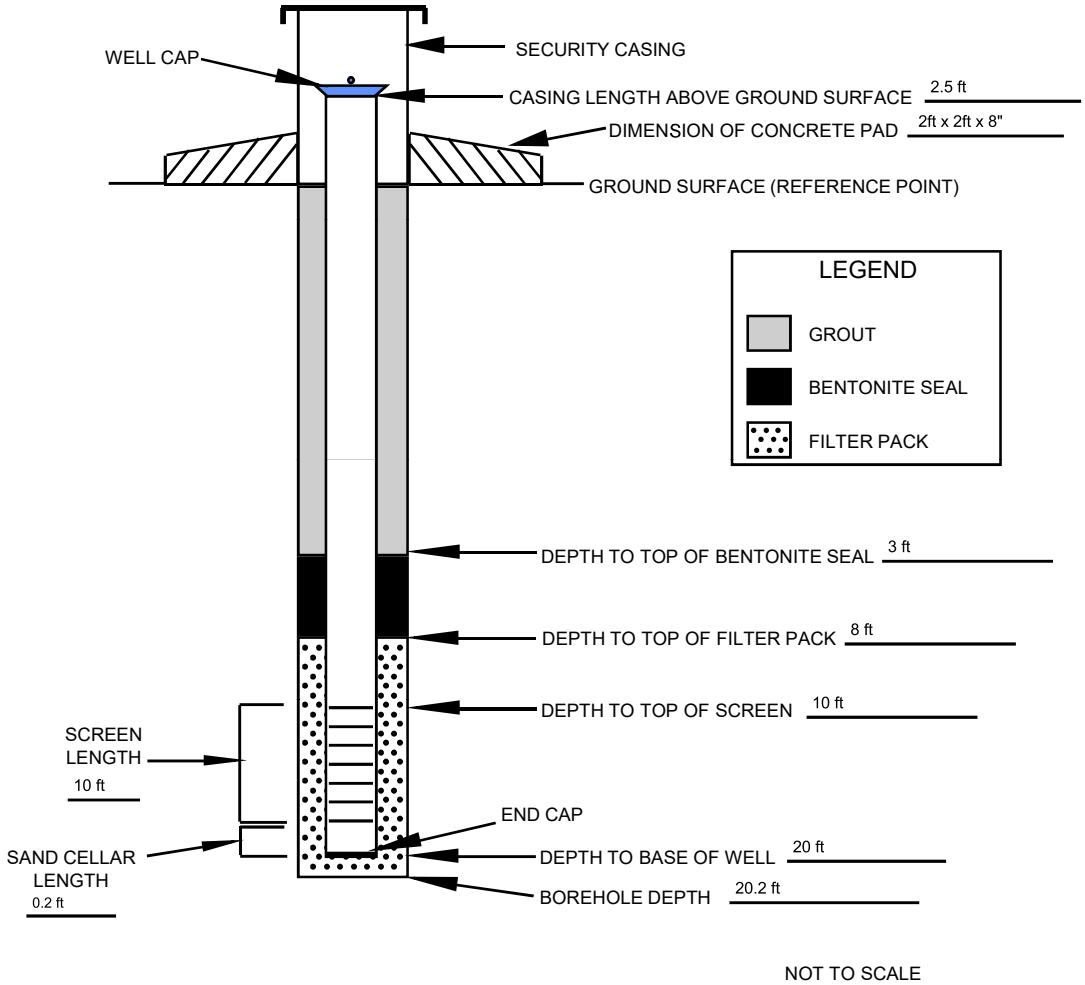
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-LGIA-MW06
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-LGIA-MW06

WELL CONSTRUCTION START DATE: 3/14/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

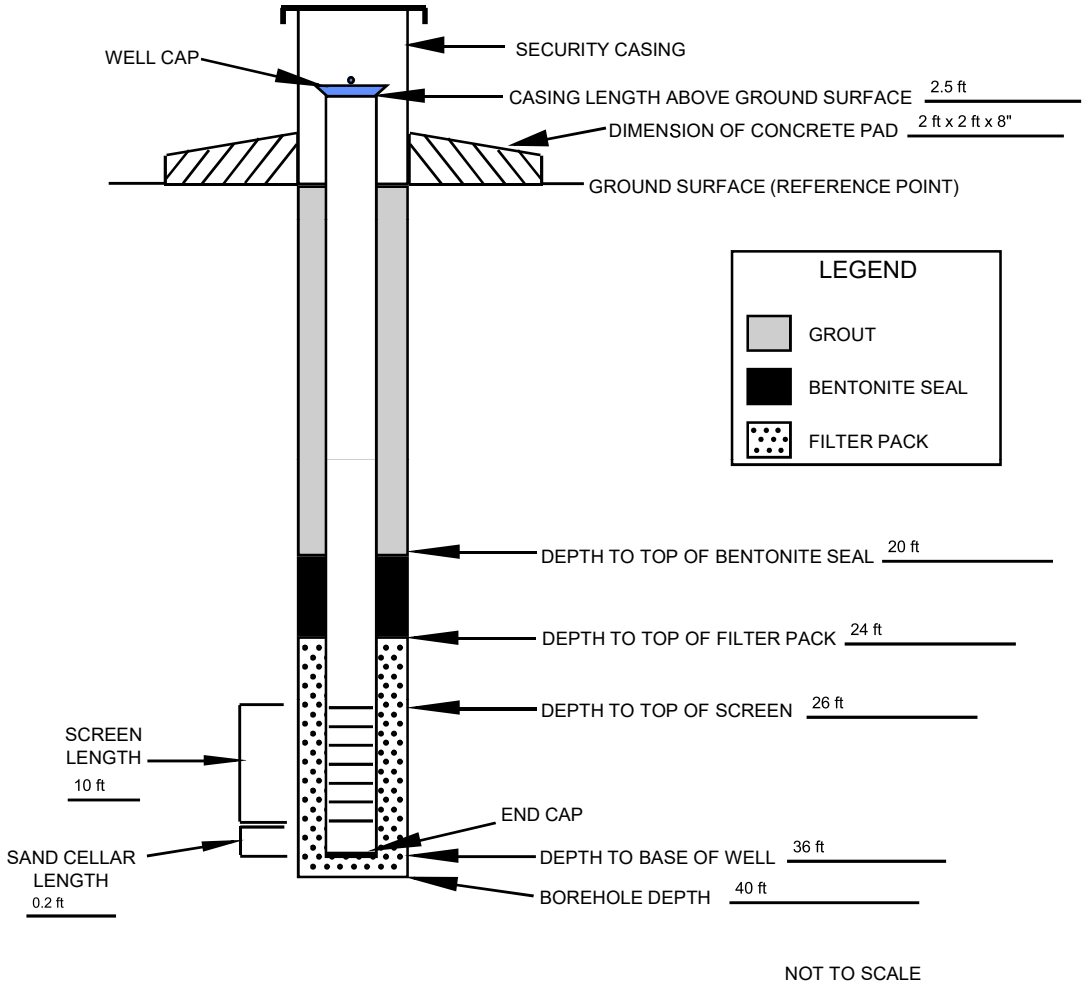
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW07
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW07

WELL CONSTRUCTION START DATE: 3/16/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

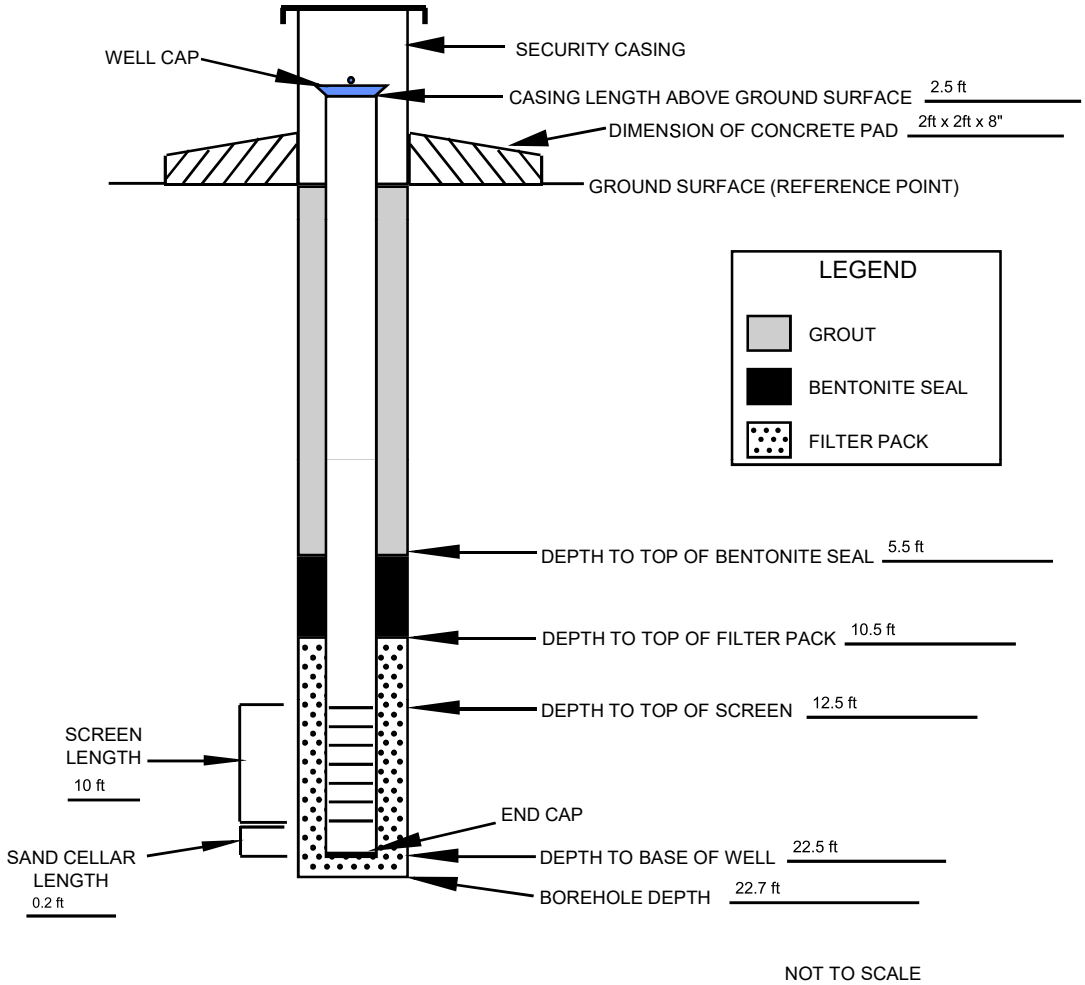
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-LGIA-MW08
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-LGIA-MW08

WELL CONSTRUCTION START DATE: 3/15/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

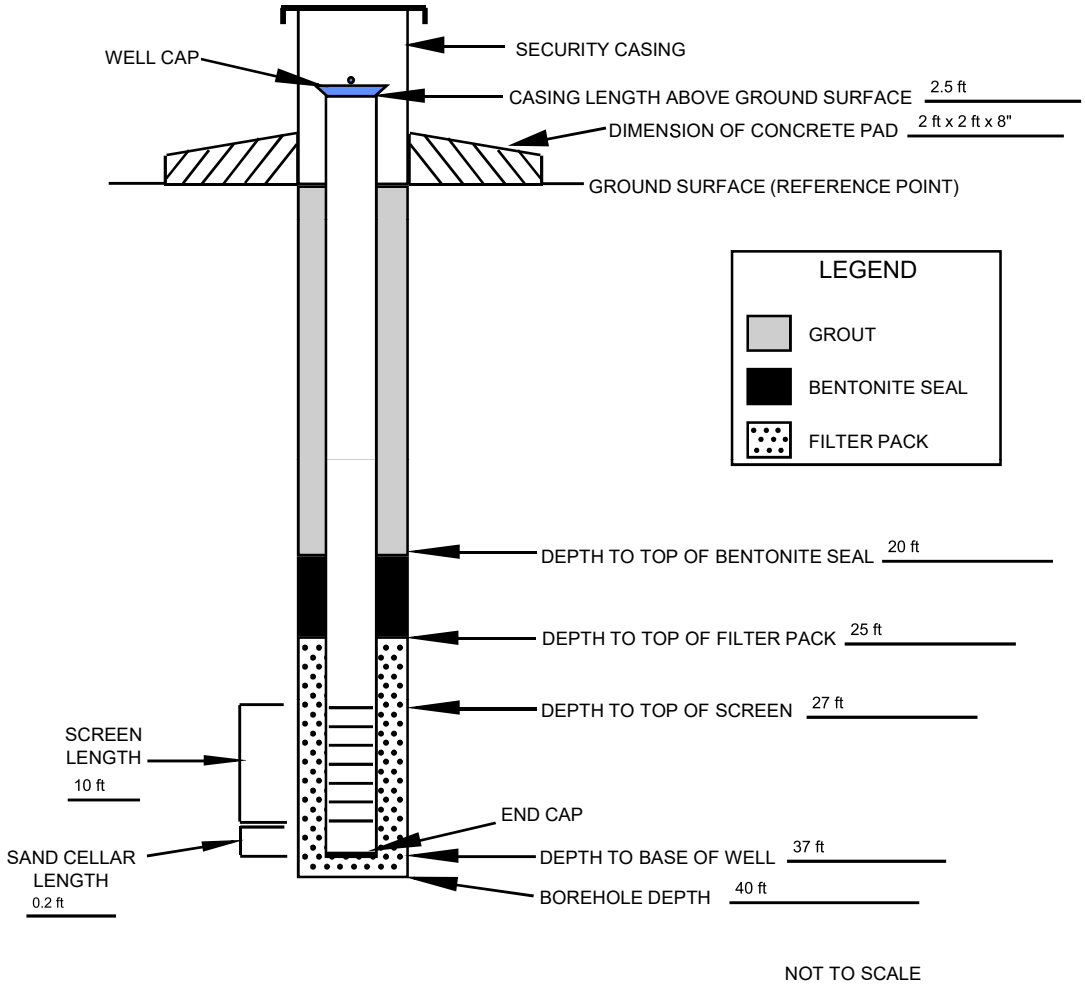
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW09
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW09

WELL CONSTRUCTION START DATE: 7/17/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

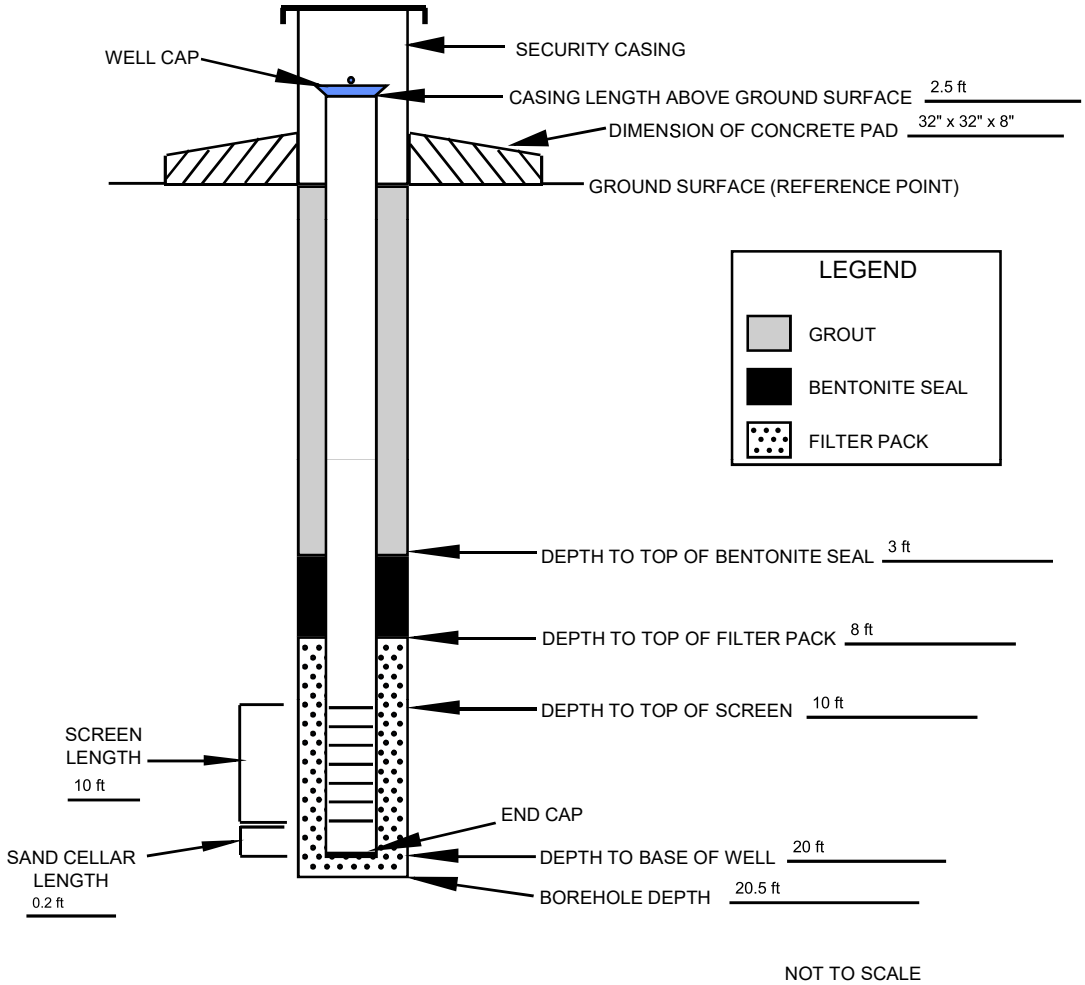
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW10
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW10

WELL CONSTRUCTION START DATE: 7/16/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

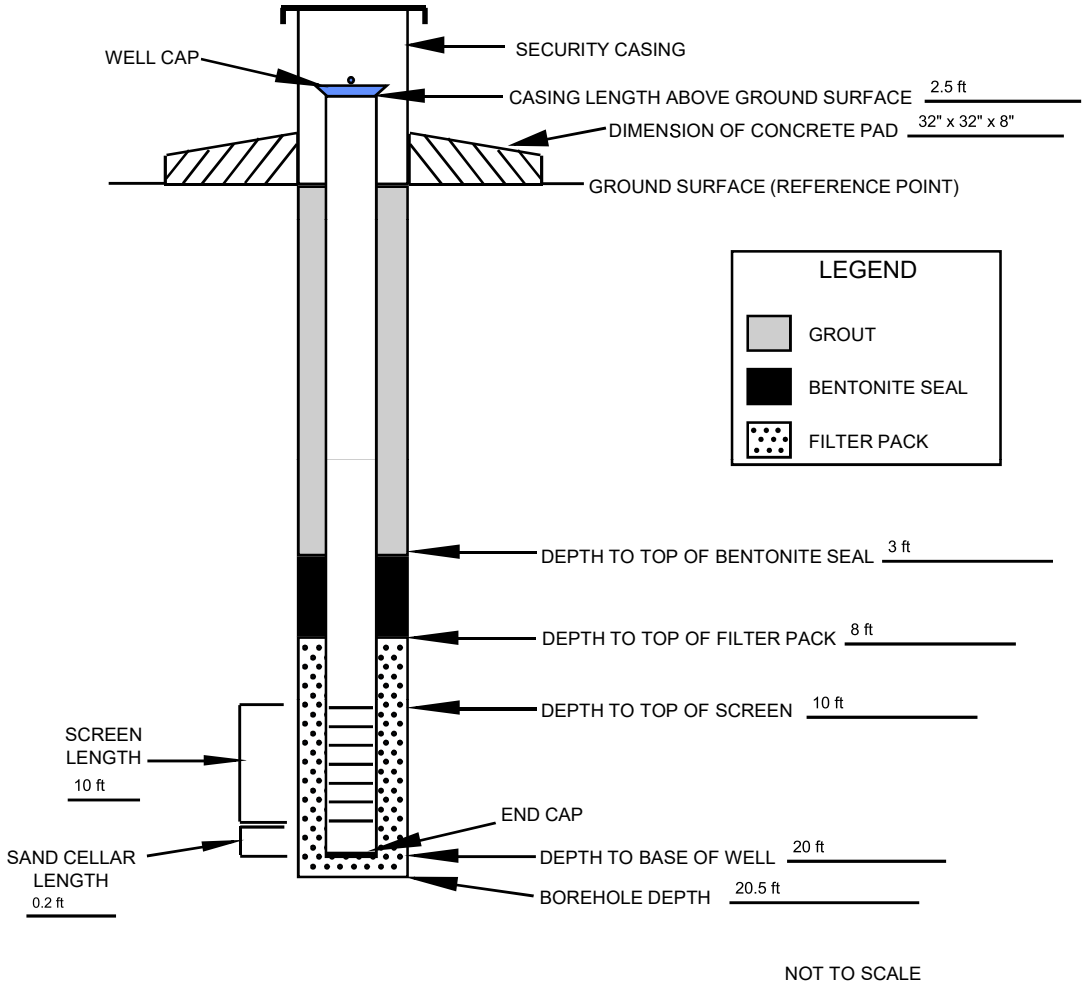
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 20B-UGIA-MW11
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 20B-UGIA-MW11

WELL CONSTRUCTION START DATE: 7/17/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

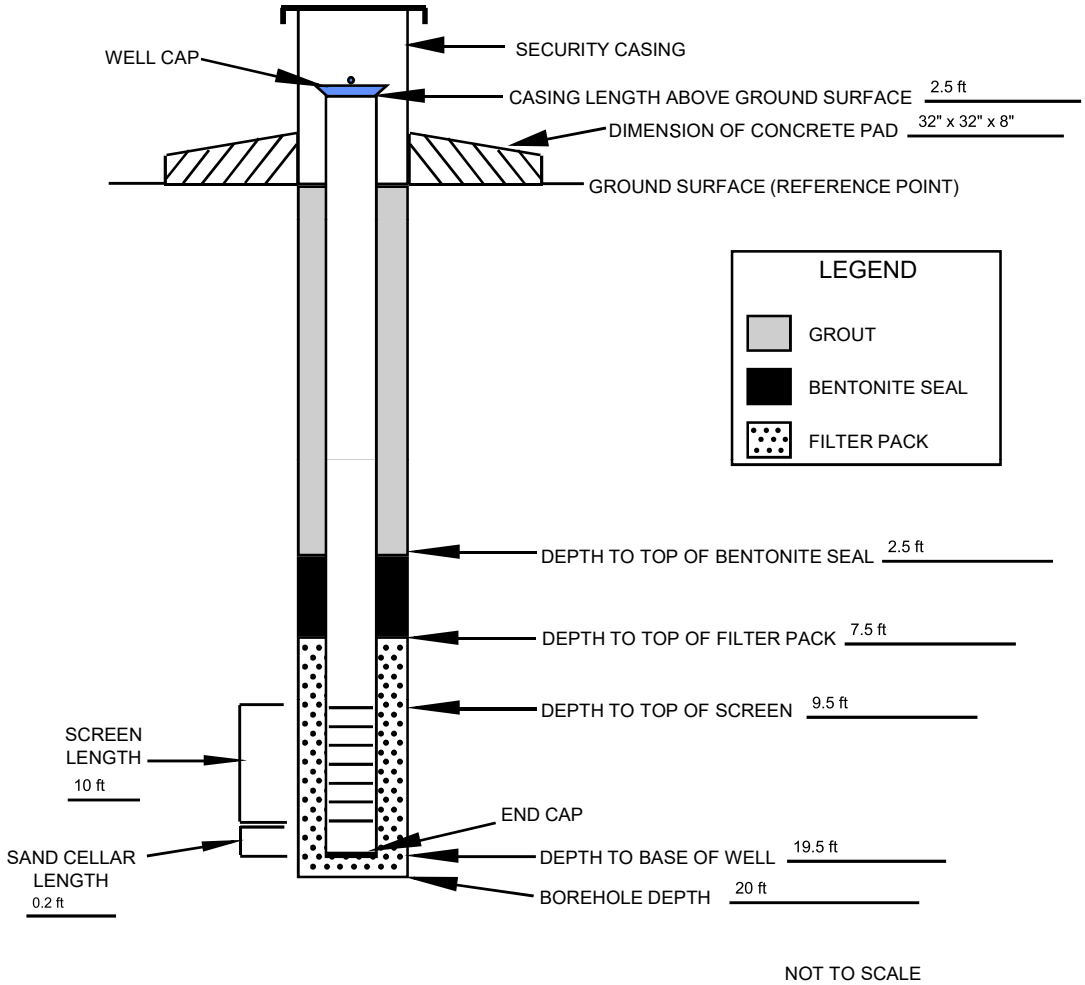
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BB UG1A-MW01
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-19-18

LOCATION: 21B-BB-UG1A-MW01 DATE INSTALLED: 5-15-18

TOTAL DEPTH (FTOC) 27.54 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 27.54 ft.

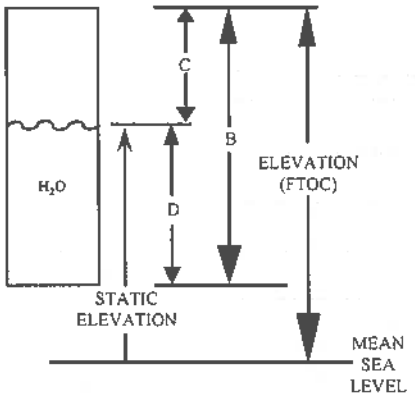
Measured Water Level Depth (C) 18.12 ft.

Length of Static Water Column (D) 27.54 (B) - 18.12 (C) = 9.42 ft. Pumping

Casing Water Volume 1.6 (A) x 9.42 (D) = 1.5072 gal

Total Purge Volume = 98 (gal)

Measured Well Depth After Development (B) 18.07 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
14:00	Surging	0.7gpm	begins					Surging
15:15	18.38	↓	52.5	7.08	3.029	11.69	63.8	No
15:20	18.13		56	7.09	2.928	11.78	>1000	Surged
15:25	18.37		59.5	7.08	3.232	11.86	>1000	↓
15:30	18.32		63	7.07	3.302	11.78	>1000	↓
15:35	18.32		66.5	7.07	3.085	11.72	↓	↓
15:40			70	7.05	3.227	11.72	↓	↓
15:45			73.5	7.07	3.220	11.72		
15:50		↓	77	7.08	3.070	11.70		
15:55		.7gpm	80.5	7.06	3.325	11.69		

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 21B-BB (LIGHT-MW01)

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
16:00	18.33	.7gpm	84	7.09	3.225	11.67	66.9	Surged
16:05	18.33	↓	87.5	7.08	3.313	11.69	32.9	Surged
16:10	18.33		91	7.09	3.075	11.65	15.3	
16:15	18.33		94.5	7.08	3.066	11.65	8.39	
16:20	18.33	.7gpm	98	7.09	3.064	11.66	13.3	

Well completed

BMH 5-19-18

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 218-BB-LGLA-MW02
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-19-18

LOCATION: 218-BB-LGLA-MW02 DATE INSTALLED: 5-16-18

TOTAL DEPTH (FTOC) 50.83ft+ CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter EC Meter Thermometer Turbidity Meter

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 50.83 ft.

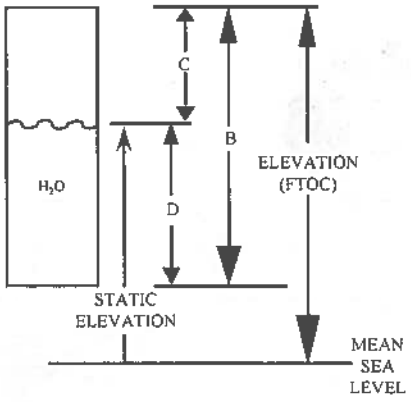
Measured Water Level Depth (C) 18.17 ft.

Length of Static Water Column (D) 50.83 (B) - 18.17 (C) = 32.66 ft. Pumping

Casing Water Volume .16 (A) x 32.66 (D) = 5.2256 gal

Total Purge Volume = 450 (gal)

Measured Well Depth After Development (B) 50.83 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
13:55		Surging		begins				
16:15	18.38	5gpm	200 gal	7.05	2.383	11.99	108	
16:20	18.38		225	7.06	2.388	12.03	92.4	
16:25	18.38		250	7.06	2.386	12.04	68.9	
16:30	18.37		275	7.06	2.385	12.05	45.2	
16:35	18.39		300	7.06	2.390	11.97	55.4	
16:40	18.38		325	7.06	2.387	11.94	49.5	
16:45	18.38		350	7.06	2.388	11.93	32.9	
16:50	18.38		375	7.06	2.387	11.91	21.6	
16:55	18.37		400	7.06	2.388	11.89	18.4	
17:00	18.38		425	7.06	2.388	11.88	16.3	
17:05	18.39	↓	450	7.06	2.388	11.88	14.4	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BB-116/A-MW03
PAGE 1 of 1

PROJECT NAME: GHAAP PROJECT NO.: 16-027 DATE: 7-24-18

LOCATION: 21B-BB-116/A-MW03 DATE INSTALLED: 7-19-18

TOTAL DEPTH (FTOC) 24.49 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 24.49 ft.

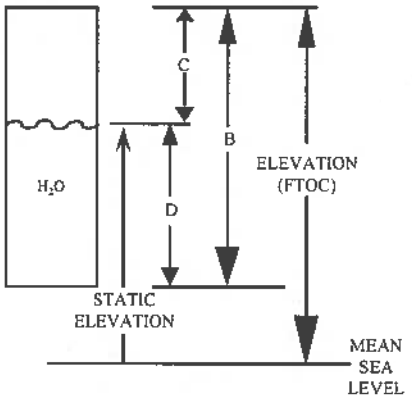
Measured Water Level Depth (C) 16.17 ft.

Length of Static Water Column (D) 24.49 (B) - 16.17 (C) = 8.32 ft. Pumping

Casing Water Volume .16 (A) x 8.32 (D) = 1.331 gal

Total Purge Volume = 5941.8 (gal) 5605

Measured Well Depth After Development (B) 24.49 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
9:55	16.17	-	Vigorously Surged throughout screen interval					
11:15	16.41	0.59 gpm	2755 492	6.62	1.398	10.15	47.4	
11:20	16.41	0.59 gpm	5.9 5015	6.62	1.401	10.16	25.3	
11:25	16.41	0.59 gpm	8.85 521	6.63	1.509	10.45	18.8	
11:30	16.41	0.59 gpm	11.8 5605	6.64	1.591	10.64	10.1	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BB-LGWA-MW04
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-627 DATE: 7-23-18

LOCATION 21B-BB-LGWA-MW04 DATE INSTALLED: 7-20-18

TOTAL DEPTH (FTOC) 46 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46 ft.

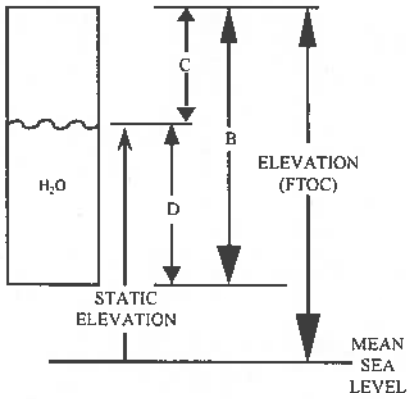
Measured Water Level Depth (C) 15.88 ft.

Length of Static Water Column (D) 46 (B) - 15.88 (C) = 30.12 ft. Pumping

Casing Water Volume .16 (A) x 30.12 (D) = 4.819 gal

Total Purge Volume = SAL 47.5 (gal) 70.2

Measured Well Depth After Development (B) 45.95 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
14:45	15.88	- Surged vigorously throughout screen interval						
15:55	15.94	0.78	~~3.5~~ SAL	6.77	1962	11.37	42.7	
16:00	15.93	0.78gpm	2.8 SAL	6.80	1.966	11.42	14.8	
16:05	15.93	0.78gpm	~~11.7~~ 24	6.81	1,967	11.42	8.5	
16:10	15.93	0.78gpm	~~15.6~~ 43	6.81	1.961	11.31	5.7	
16:15	15.93	0.78gpm	30 / 47.5 70.2					

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 21B-BB LGIA-MW04

PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
10:35	13.42	.7gpm	73.5	4.16	1.564	12.27	28.2	
10:40	13.42		77	3.82	1.574	12.34	27.8	
10:45								
10:50	Battery died on pump							
10:55	13.42	.7gpm	80.5	3.62	1.495	11.98	18.9	
11:00	13.42		84	3.92	1.492	11.99	19.9	
11:05	13.42	.7gpm	87.5	4.57	1.548	11.99	19.4	
	Well completed							

BHH 5-20-18

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BB-UGIA-MW01
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BB-UGIA-MW01

WELL CONSTRUCTION START DATE: 5/16/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

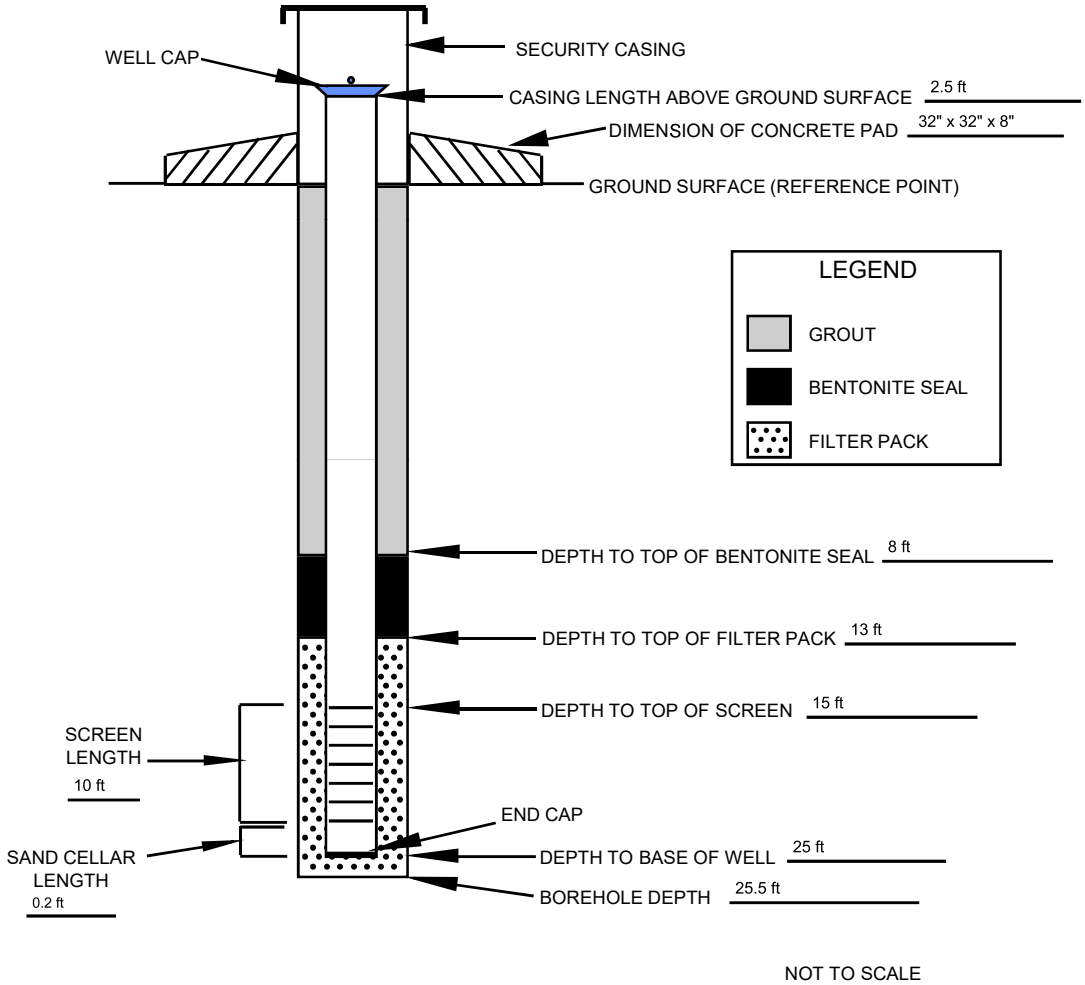
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BB-LGIA-MW02
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BB-LGIA-MW02

WELL CONSTRUCTION START DATE: 5/16/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

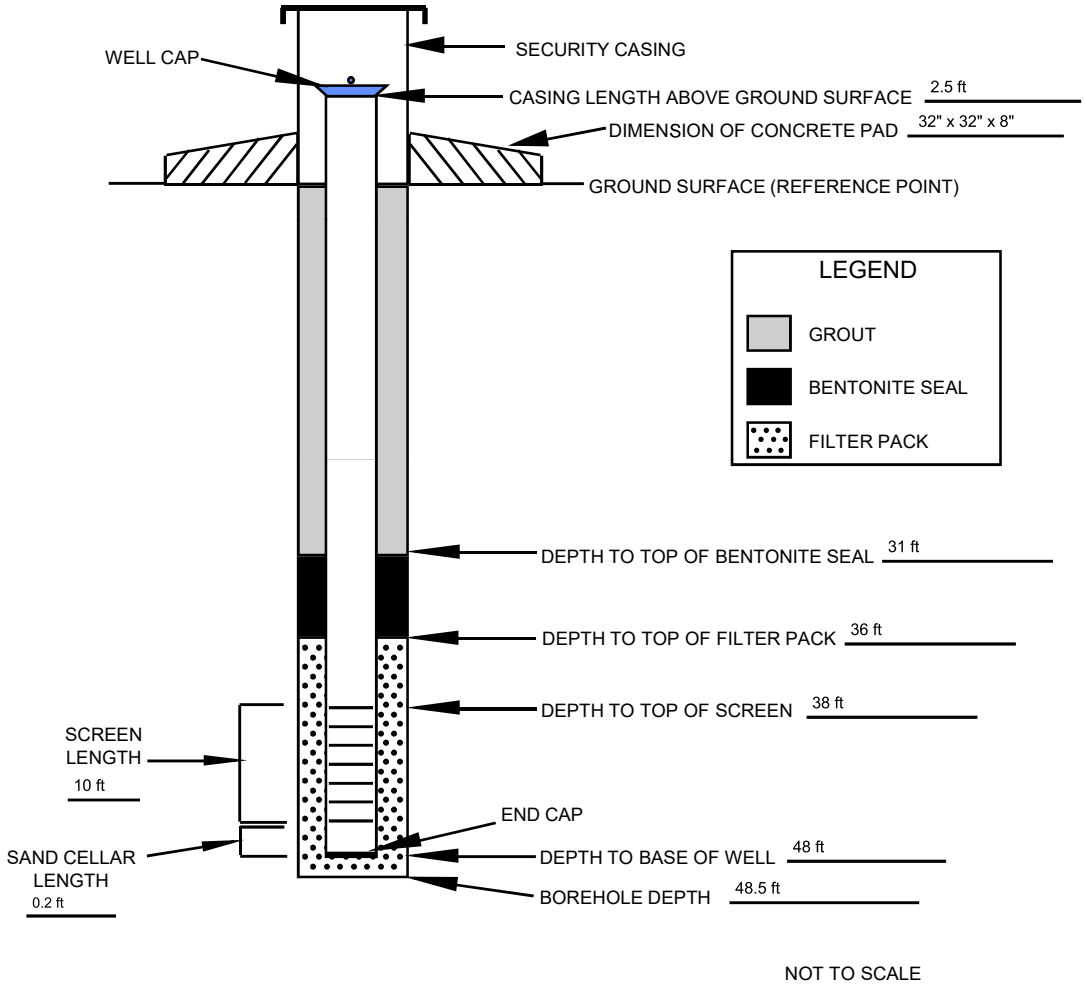
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BB-UGIA-MW03
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BB-UGIA-MW03

WELL CONSTRUCTION START DATE: 7/19/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

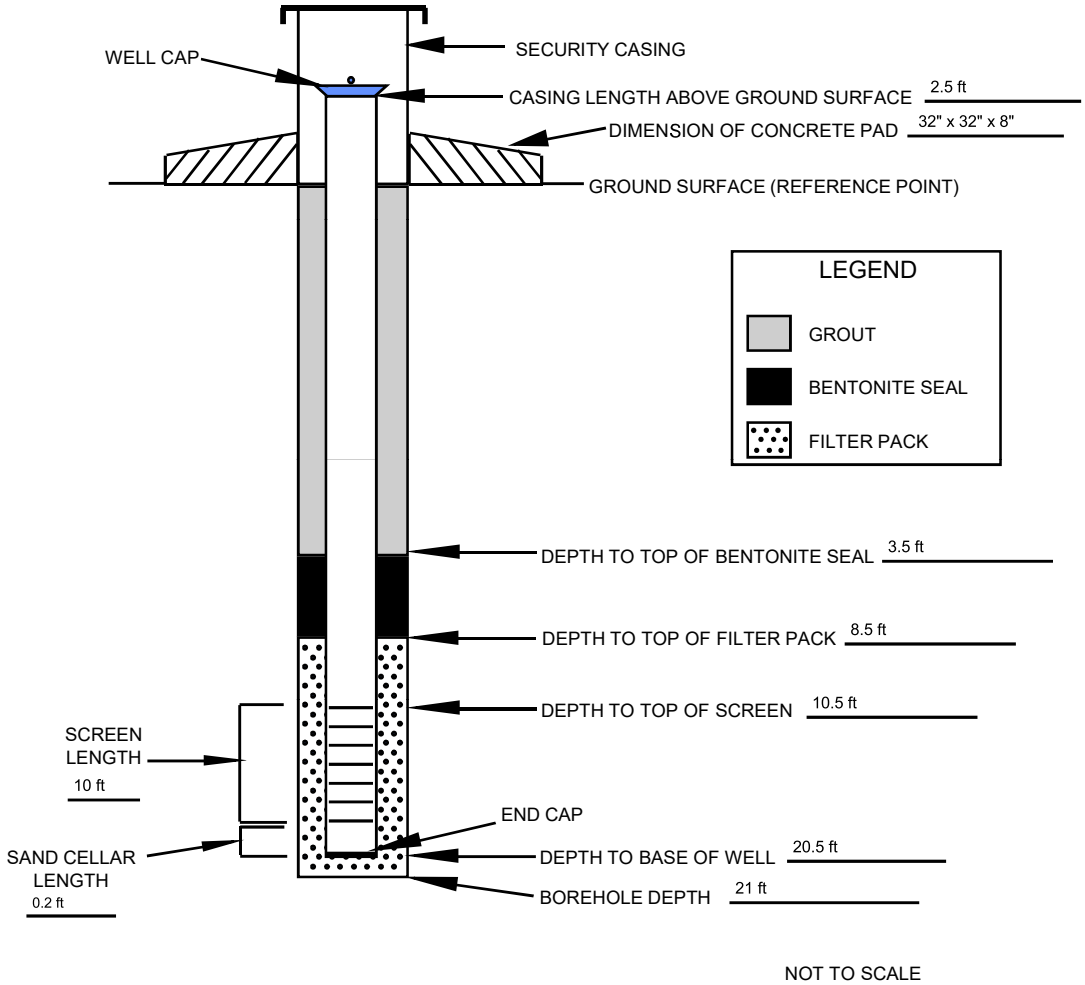
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BB-LGIA-MW04
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BB-LGIA-MW04

WELL CONSTRUCTION START DATE: 7/20/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 100 lbs

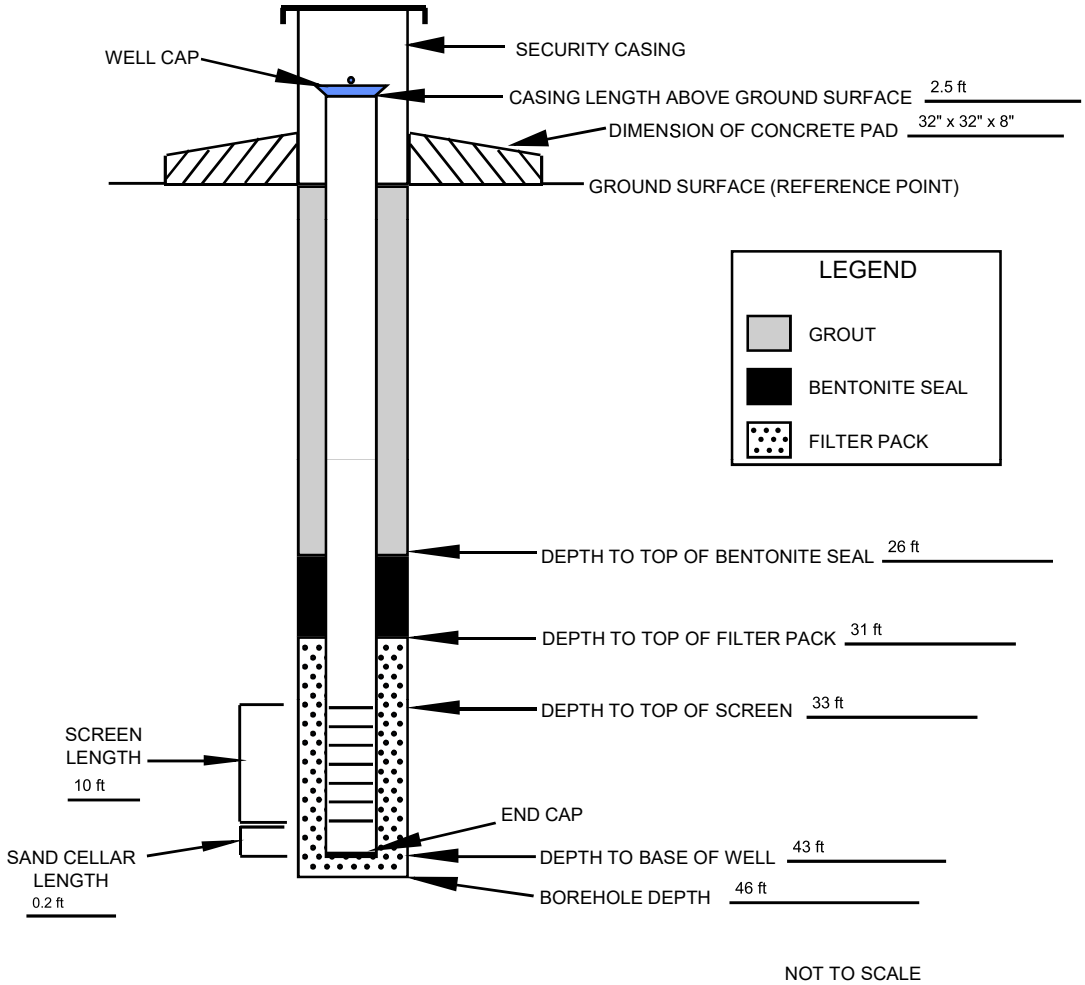
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA UGW-MW01
PAGE 1 of 2

PROJECT NAME CHAAP PROJECT NO.: 16-027 DATE: 5-21-18

LOCATION: 21B-BPA-UGW-MW01 DATE INSTALLED: 5-16-18

TOTAL DEPTH (FTOC) 23.89ft CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe ____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe ____

EQUIPMENT NUMBERS:

pH Meter ____ EC Meter ____ Thermometer ____ Turbidity Meter ____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 23.89 ft.

Measured Water Level Depth (C) 11.17 ft.

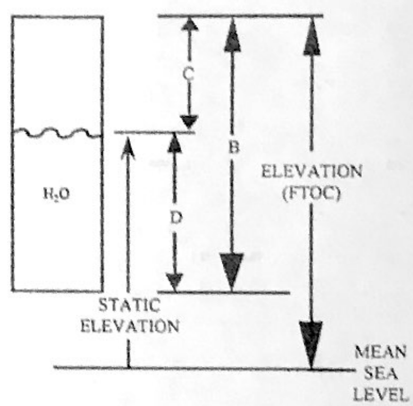
Length of Static Water Column (D) 23.99 (B) - 11.17 (C) = 12.72 ft.

Pumping

Casing Water Volume .16 (A) 12.72 (D) = 2.035 gal

Total Purge Volume = 84 (gal)

Measured Well Depth After Development (B) 23.87 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
9:30	Surging	begins		—	—	—	—	—
Vigorously surged throughout screened interval								
11:20	11.45	.7gpm	77	7.02	3.495	11.81	10.6	
11:25	11.45	"	80.5	7.03	3.467	11.82	4.8	
11:30	11.45	.7gpm	84	7.00	3.655	11.85	4.3	
							well completed 5-21-18	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA-LGWA-MW02
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-21-18

LOCATION 21B-BPA-LGWA-MW02 DATE INSTALLED: 5-16-18

TOTAL DEPTH (FTOC) 42.74 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 42.74 ft.

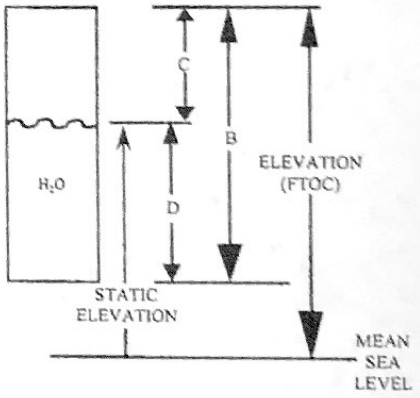
Measured Water Level Depth (C) 11.01 ft.

Length of Static Water Column (D) 42.74 (B) - 11.01 (C) = 31.73 ft. Pumping

Casing Water Volume 1 (A) x 31.73 (D) = 50768 gal

Total Purge Volume = _____ (gal)

Measured Well Depth After Development (B) 42.74 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
9:30		Surging	begins	—	—	—	—	—
vigourously	surged	throughout	screened	interval				
11:40	11.21			7.21	3.692	13.40	11.1	
11:45	11.23			7.17	3.673	13.59	8.4	
11:50	11.23			7.23	3.681	14.11	6.0	
								well completed
								BLH 5-21-18

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21BBPA UGIA-MW03
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 4-4-18

LOCATION: 21B-BPA-UGIA-MW03 DATE INSTALLED: 3-30-18

TOTAL DEPTH (FTOC) 22.82 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.82 ft.

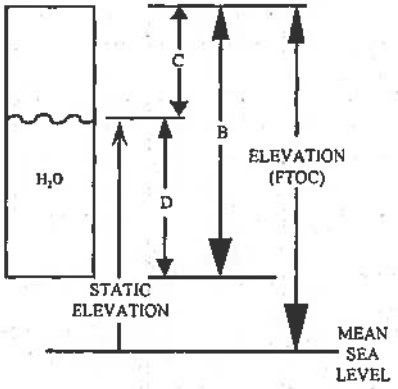
Measured Water Level Depth (C) 13.09 ft.

Length of Static Water Column (D) 22.82 (B) - 13.09 (C) = 9.73 ft. Pumping

Casing Water Volume .16 (A) x 9.73 (D) = 1.5568 gal

Total Purge Volume = 113.6 (gal)

Measured Well Depth After Development (B) 22.82 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
10:10	13.47	1.6gpm	1.6	7.37	2.008	10.04	>1000	Surged
10:15	13.12	1.6gpm	9.6	7.32	1.175	10.03	>1000	Surged
10:20	13.36	1.6gpm	17.6	7.29	2.077	9.83	548	
10:25	13.38	1.6gpm	25.6	7.26	2.108	10.08	743	
10:30	13.43	1.6gpm	33.6	7.25	2.111	10.17	717	Surged
10:35	13.47	1.6gpm	41.6	7.25	2.074	9.91	>1000	
10:40	13.48	1.6gpm	49.6	7.24	2.088	10.07	211	Surged
10:45	13.43	1.6gpm	57.6	7.24	2.060	9.93	464	
10:50	13.43	1.6gpm	65.6	7.23	2.090	10.27	359	
10:55	13.46	1.6gpm	73.6	7.22	2.112	10.53	84.5	
11:00	13.47	1.6gpm	81.6	7.21	2.118	10.57	33.0	

HGL HydroGeoLogic, Inc
Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 21B-BPA-UGIA-MW03
PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
11:05	13.48	1.6gpm	" ~~17.1~~ 86	7.20	2.125	10.52	19.9	
11:10	13.50	1.6gpm	" ~~20.8~~ 92	7.19	2.115	10.53	11.4	
11:15	13.50	1.6gpm	" ~~22.4~~ 105	7.16	2.113	10.51	9.63	
11:20	13.51	1.6gpm	" ~~24~~ 136	7.14	2.112	10.50	6.12	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 2B-BPA-LGIA-MW04
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO. : 16-027 DATE: 4-4-18

LOCATION: 2B-BPA-LGIA-MW04 DATE INSTALLED: 3-30-18

TOTAL DEPTH (FTOC) 42.12 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI 556 Thermometer YSI 556 Turbidity Meter Hanna

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 42.12 ft.

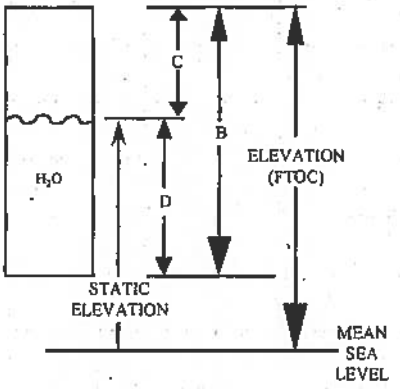
Measured Water Level Depth (C) 13.08 ft.

Length of Static Water Column (D) 42.12 (B) - 13.08 (C) = 29.04 ft. Pumping

Casing Water Volume .16 (A) x 29.04 (D) = 4.6464 gal

Total Purge Volume = 184.8 (gal)

Measured Well Depth After Development (B) 42.12 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
10:10	13.23	2.8gpm	2.8	6.59	2.214	11.13	>1000	Surged
10:15	13.23	2.8gpm	11.8	6.59	2.280	11.19	>1000	Surged
10:20	13.25	2.8gpm	30.8	6.59	2.076	11.08	>1000	
10:25	13.26	2.8gpm	44.8	6.59	2.204	11.13	153	
10:30	13.25	2.8gpm	58.8	6.59	2.219	11.21	>1000	Surged
10:35	13.26	2.8gpm	72.8	6.60	2.217	11.17	115	Surged
10:40	13.24	2.8gpm	86.8	6.60	2.211	11.22	411	
10:45	13.24	2.8gpm	100.8	6.60	2.223	11.32	97.6	Surged
10:50	13.24	2.8gpm	114.8	6.61	2.172	11.30	178	
10:55	13.23	2.8gpm	128.8	6.61	2.224	11.40	41.6	
11:00	13.23	2.8gpm	142.8	6.61	2.225	11.31	3.86	

HGL HydroGeoLogic, Inc
Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 218-BPA LGIA-MW04

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
11:05	13.23	2.8gpm	156.8	6.61	2.286	11.32	4.61	
11:10	13.24	2.8gpm	170.8	6.62	2.278	11.31	7.22	
11:15	13.24	2.8gpm	184.8	6.62	2.281	11.32	8.93	

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA-LG1A-MW05
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-20-18

LOCATION: 21B-BPA-LG1A-MW05 DATE INSTALLED: 5-17-18

TOTAL DEPTH (FTOC) ______ CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe ______

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe ______

EQUIPMENT NUMBERS:

pH Meter ______ EC Meter ______ Thermometer ______ Turbidity Meter ______

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 43.72 ft.

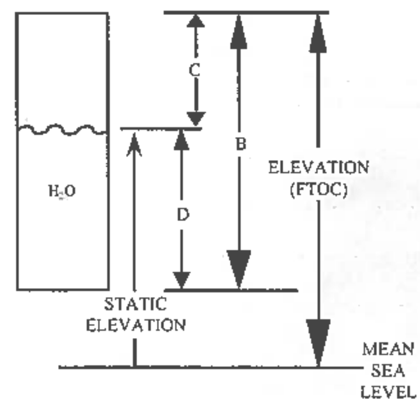
Measured Water Level Depth (C) 12.17 ft.

Length of Static Water Column (D) 43.72 (B) - 12.17 (C) = 31.55 ft. Pumping

Casing Water Volume .16 (A) x 31.55 (D) = 5.048 gal

Total Purge Volume = 450 (gal)

Measured Well Depth After Development (B) 43.72 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
13:05	Surging		begins	—	—	—	—	-
vigorously		surge	throughout	screened		interval.		
16:30	12.23	2gpm	375	7.19	3.681	12.23	132	
16:35	12.24	~~2gpm~~ 2.5	382.5	7.16	2.137	12.24	106	
16:40	12.24	~~2gpm~~ 2.5	400	7.12	2.099	12.24	47.3	
16:45	12.24	2.5 gpm	412.5	7.30	2.092	12.23	28.0	
16:50	12.24	2.5gpm	425.	7.47	2.088	12.24	18.6	
16:55	12.24	2.5gpm	437.5	7.48	2.087	12.23	11.4	
17:00	12.24	2.5gpm	450	7.52	2.087	12.23	7.4	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA-UG1A-MWDC
PAGE 1 of 2

PROJECT NAME: CHAMP PROJECT NO.: 16-027 DATE: 5-26-18

LOCATION 21B-BPA-UG1A-MWDC DATE INSTALLED: 5-17-18

TOTAL DEPTH (FTOC) _____ CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 19.82 ft.

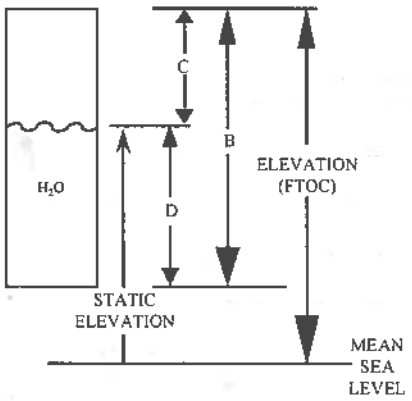
Measured Water Level Depth (C) 12.32 ft.

Length of Static Water Column (D) 19.82 (B) − 12.32 (C) = 7.50 ft. Pumping

Casing Water Volume 16 (A) x 7.50 (D) = 1.2 gal

Total Purge Volume = 73.5 (gal)

Measured Well Depth After Development (B) 19.82 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
13:40		Surging begins						Surge ↓
14:55	12.53	.7gpm	52.5	7.29	2.835	11.99	>1000	
15:00	12.55	"	56	7.34	2.923	11.61	34	
15:05	12.54		59.5	7.62	2.902	11.56	29.7	
15:10	12.54		63	7.22	2.894	11.60	22.5	
15:15	12.54		66.5	8.36	2.897	11.66	19.1	
15:20	12.54	↓	70	8.12	2.893	11.55	17.1	
15:25	12.54	.7gpm	73.5	7.34	2.888	11.50	13.1	
15:30		"						

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc
Exceeding Expectations

WELL/PIEZOMETER ID 21B-BPA-VGIA-MW0
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/8/18

LOCATION: 21B DATE INSTALLED: 4.3.18

TOTAL DEPTH (FTOC) 22.70 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox & water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.70 ft.

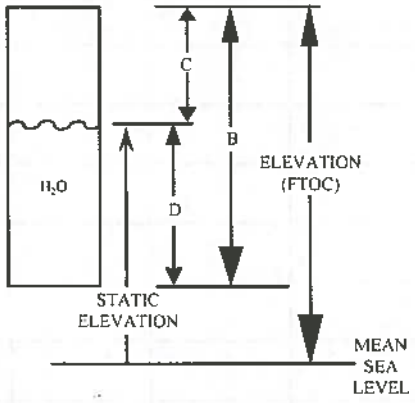
Measured Water Level Depth (C) 11.20 ft.

Length of Static Water Column (D) 22.70 (B) - 11.20 (C) = 11.50 ft. Pumping

Casing Water Volume 0.16 (A) x 11.50 (D) = 1.84 gal

Total Purge Volume = 51.7 (gal)

Measured Well Depth After Development (B) 22.69 ft.



Purge started @ 1135

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1200	~~11.20~~ 11.57 SG	2.3 lpm	—	6.79	1.908	10.11	37.9	
1210	11.52	|	—	6.70	1.889	10.04	116	
1225	11.52	|	—	6.92	1.900	9.95	41.2	
1235	11.53	|	—	6.91	1.905	9.90	16.2	
1245	11.55	|	—	6.91	1.933	10.20	~~9.71~~ SG	23.9
1255	11.55	|	—	6.92	1.934	10.18	9.13	
1300	11.56	|	51.7	6.84	1.958	10.33	3.47	

4/8/18

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BFA-LGIA-MW0
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/8/18

LOCATION: 21B DATE INSTALLED: 4-3-18

TOTAL DEPTH (FTOC) 41.10 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox + water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 41.10 ft.

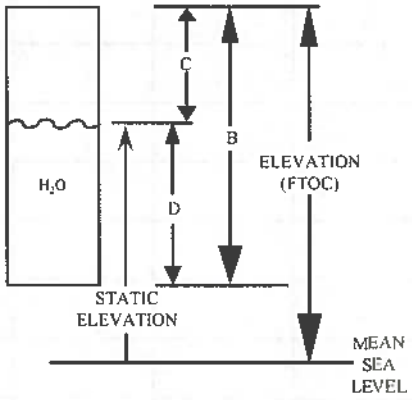
Measured Water Level Depth (C) 11.15 ft.

Length of Static Water Column (D) 41.10 (B) - 11.15 (C) = 29.95 ft. Pumping

Casing Water Volume 0.16 (A) x 29.95 (D) = 4.79 gal

Total Purge Volume = 164 (gal)

Measured Well Depth After Development (B) 41.18 ft.



Pump started @1135

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1200	11.33	6.2 lpm	—	6.88	2.177	10.90	259	
1210	11.33		—	6.84	2.180	10.96	493	
1225	11.33		—	6.93	2.170	10.82	136	
1235	11.34		—	6.94	2.216	11.08	92.7	
1245	11.35		—	6.92	2.201	11.01	72.4	
1255	11.35		—	6.94	2.212	11.10	8.10	
1305	11.35		—	6.88	2.228	11.43	8.09	
1310	11.35		—	6.94	2.238	11.38	7.78	
1315	11.35	↓	164	6.95	2.241	11.39	5.98	
						4/8/18		

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA-UG1A-MW09
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-24-18

LOCATION: 21B-BPA-UG1A-MW09 DATE INSTALLED: 7-20-18

TOTAL DEPTH (FTOC) 23.67 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 23.67 ft.

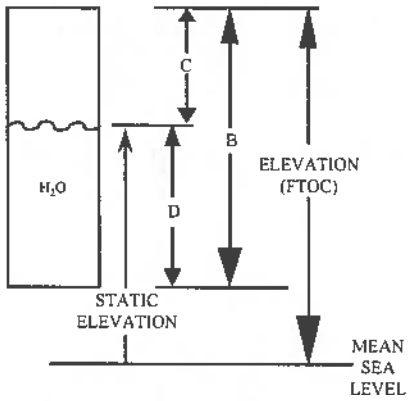
Measured Water Level Depth (C) 14.10 ft.

Length of Static Water Column (D) 23.67 (B) - 14.10 (C) = 9.57 ft. Pumping

Casing Water Volume .16 (A) x 9.57 (D) = 1.531 gal

Total Purge Volume = ~~36.75 (gal)~~ 84gal

Measured Well Depth After Development (B) 23.67 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
13:05	14.10	—	Vigorously Surged throughout screen interval					
14:15	14.29	1.05gpm	~~7.5 5.25~~	6.51	2.023	10.46	8.93	
14:20	14.29	1.05gpm	~~5.25 10.5 5.25~~	6.51	2.017	10.48	3.21	
14:25	14.29	1.05gpm	~~15.75~~ 84	6.49	2.013	10.40		

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA-LGIA-MW10
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-24-18

LOCATION: 21B-BPA-LGIA-MW10 DATE INSTALLED: 7-17-18

TOTAL DEPTH (FTOC) 46.85 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.571

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46.85 ft.

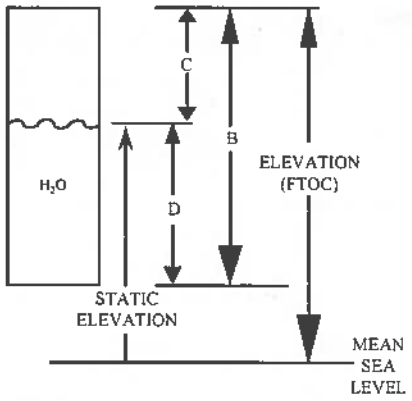
Measured Water Level Depth (C) 14.04 ft.

Length of Static Water Column (D) 46.85 (B) - 14.04 (C) = 32.81 ft. Pumping

Casing Water Volume .16 (A) x 32.81 (D) = 5.249 gal

Total Purge Volume = 43.2 (gal)

Measured Well Depth After Development (B) 46.85 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
15:25	14.04	- Surged Vigorously throughout screen interval						
16:00	14.15	0.96gpm	33.6	6.77	2.228	11.08	18.7	
16:05	14.15	0.96	38.4	6.76	2.229	11.09	8.24	
16:10	14.15	0.96	43.2	6.75	2.229	11.05	5.40	

HGL HydroGeoLogic, Inc.

218-BPA-UGIA-MW11

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID: 218-BPA-UGIA-MW11
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 8/6/18

LOCATION: Tract 21C DATE INSTALLED: 7/21/18

TOTAL DEPTH (FTOC): 21.72 CASING DIAMETER: 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL: 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe ______

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe ______

EQUIPMENT NUMBERS:

pH Meter: 11F100175 EC Meter: 11F100175 Thermometer: 11F100175 Turbidity Meter: U641HX

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B): 21.72 ft.

Measured Water Level Depth (C): 16.02 ft.

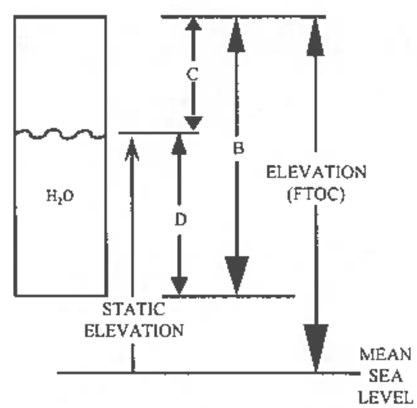
Length of Static Water Column (D): 21.72 (B) - 16.03 (C) = 5.7 ft.

Pumping

Casing Water Volume: 0.16 (A) x 5.7 (D) = 0.912 gal

Total Purge Volume = 180 (gal)

Measured Well Depth After Development (B): 21.72 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1030	16.02	2gpm	—	—	—	—	—	—
Surged vigorously	throughout	screened	interval					
1145	16.12	2gpm	150	6.64	2.590	11.08	3.34	
1150	16.02	2gpm	160	6.73	2.596	11.15	2.63	
1155	16.02	2gpm	170	6.69	2.594	11.09	1.87	
1200	16.02	2gpm	180	6.68	2.592	11.04	1.43	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-BPA-LGIA-MW12
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16027 DATE: 7-24-18

LOCATION: 21B-BPA-LGIA-MW12 DATE INSTALLED: 7-20-18

TOTAL DEPTH (FTOC) 22.79 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter EC Meter Thermometer Turbidity Meter

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.79 ft.

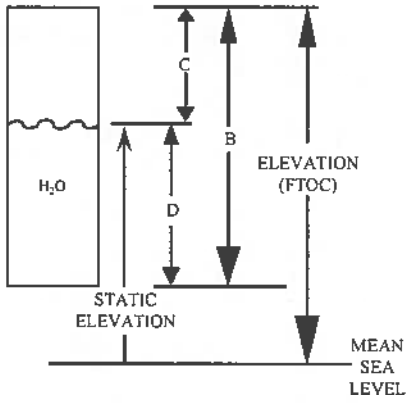
Measured Water Level Depth (C) 15.06 ft.

Length of Static Water Column (D) 22.79 (B) - 15.06 (C) = 7.73 ft. Pumping

Casing Water Volume .16 (A) x 7.73 (D) = 1.236 gal

Total Purge Volume = 98 (gal)

Measured Well Depth After Development (B) 22.61 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
11:55	15.06	Surged Vigorously throughout screen interval						
13:40	15.14	0.70	73.5	6.54	2.119	10.87	64.7	
13:45	15.14	0.70	77	6.54	2.119	11.14	49	
13:50	Water Pump Malfunction							
14:40	Surging commences again for ten minutes							
14:50	15.25	0.70 gpm	84	6.69	2.073	10.32	19.3	
14:55	15.25	0.70 gpm	91	6.68	2.076	10.30	5.37	
15:00	15.25	0.70 gpm	98	6.67	2.071	10.31	1.80	

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-UGIA-MW01
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-UGIA-MW01

WELL CONSTRUCTION START DATE: 5/17/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

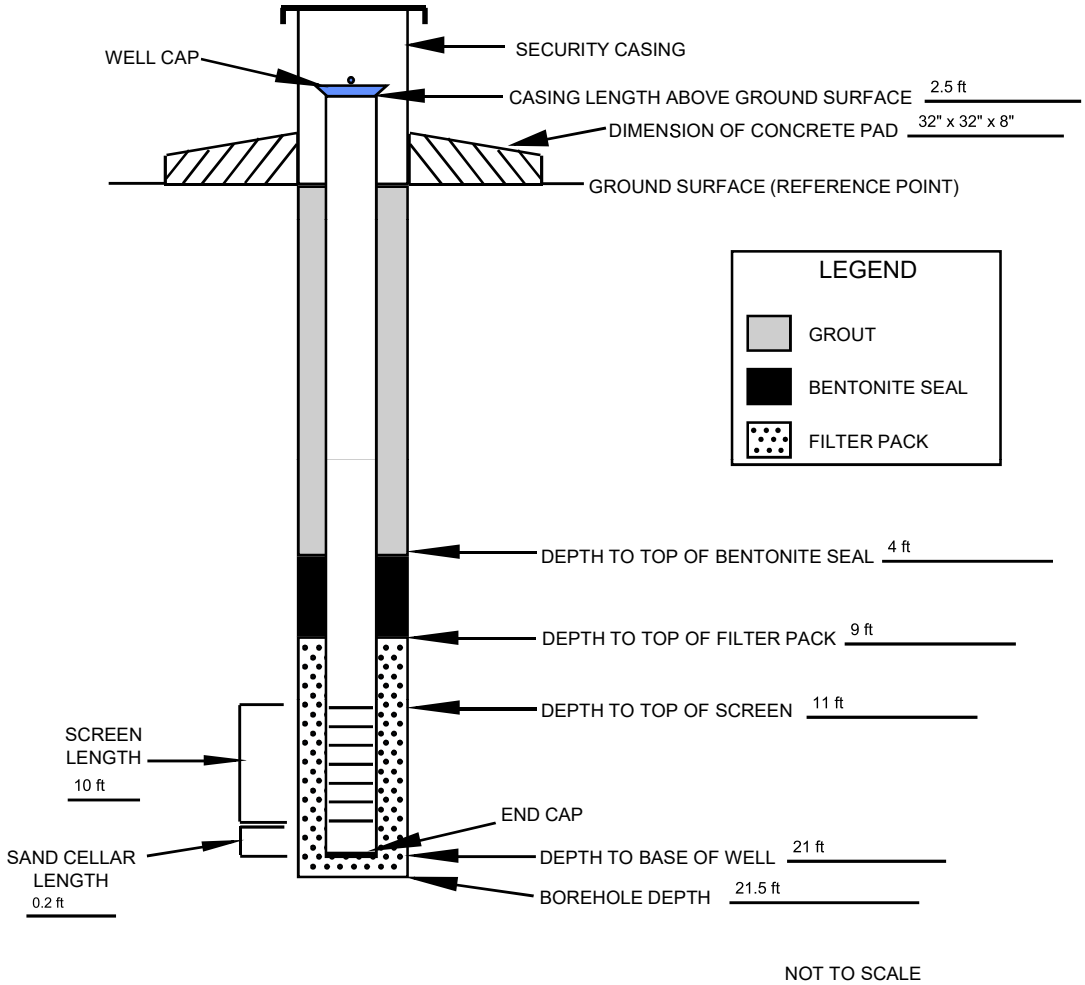
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-LGIA-MW02
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-LGIA-MW02

WELL CONSTRUCTION START DATE: 5/17/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

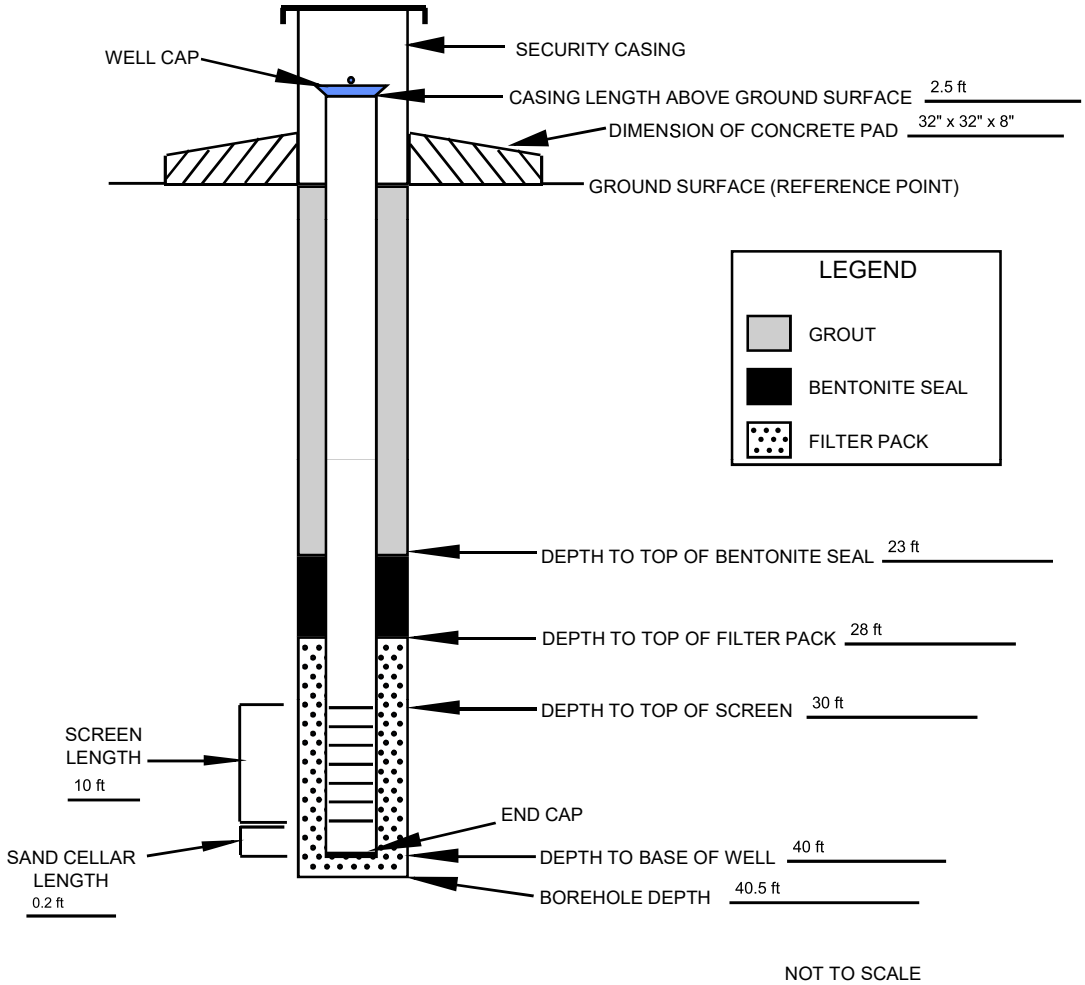
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-UGIA-MW03
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-UGIA-MW03

WELL CONSTRUCTION START DATE: 3/30/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

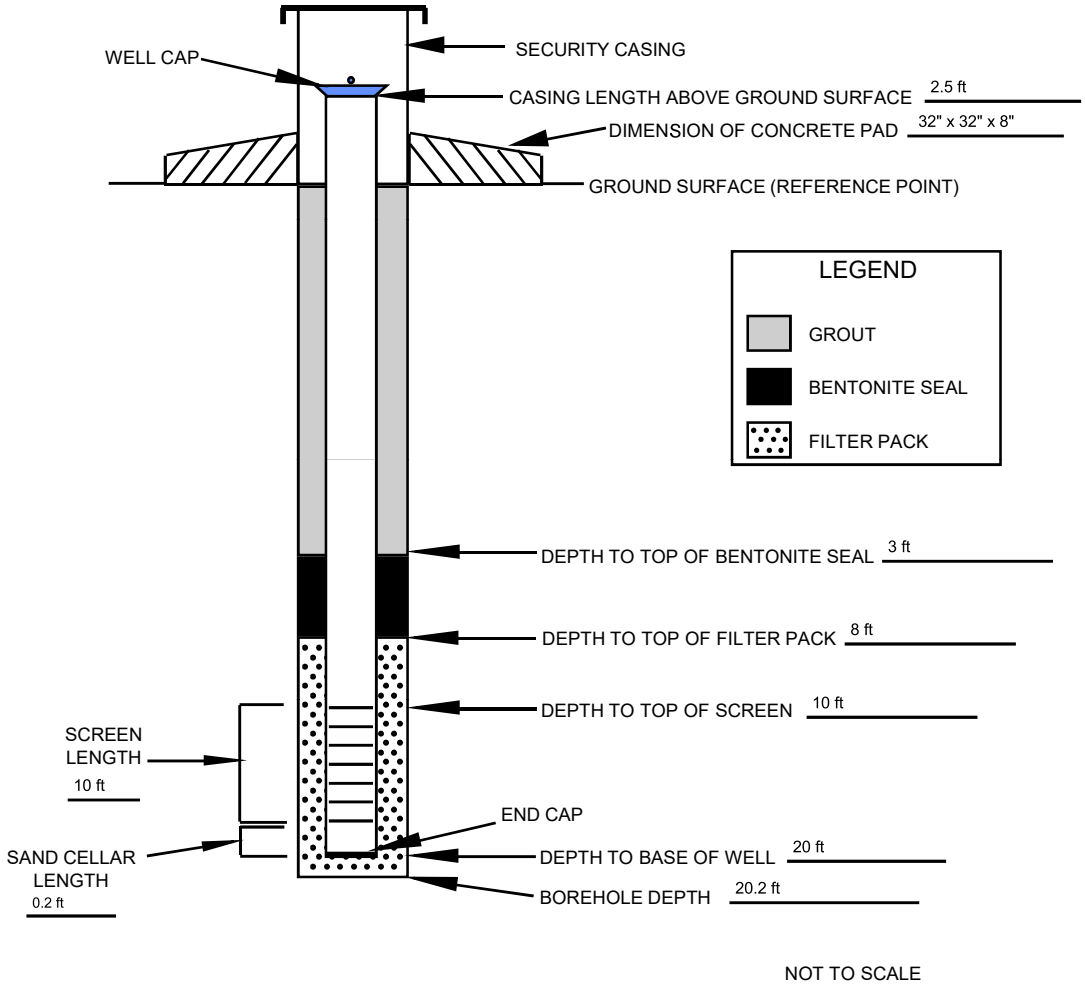
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-LGIA-MW04
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-LGIA-MW04

WELL CONSTRUCTION START DATE: 3/30/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

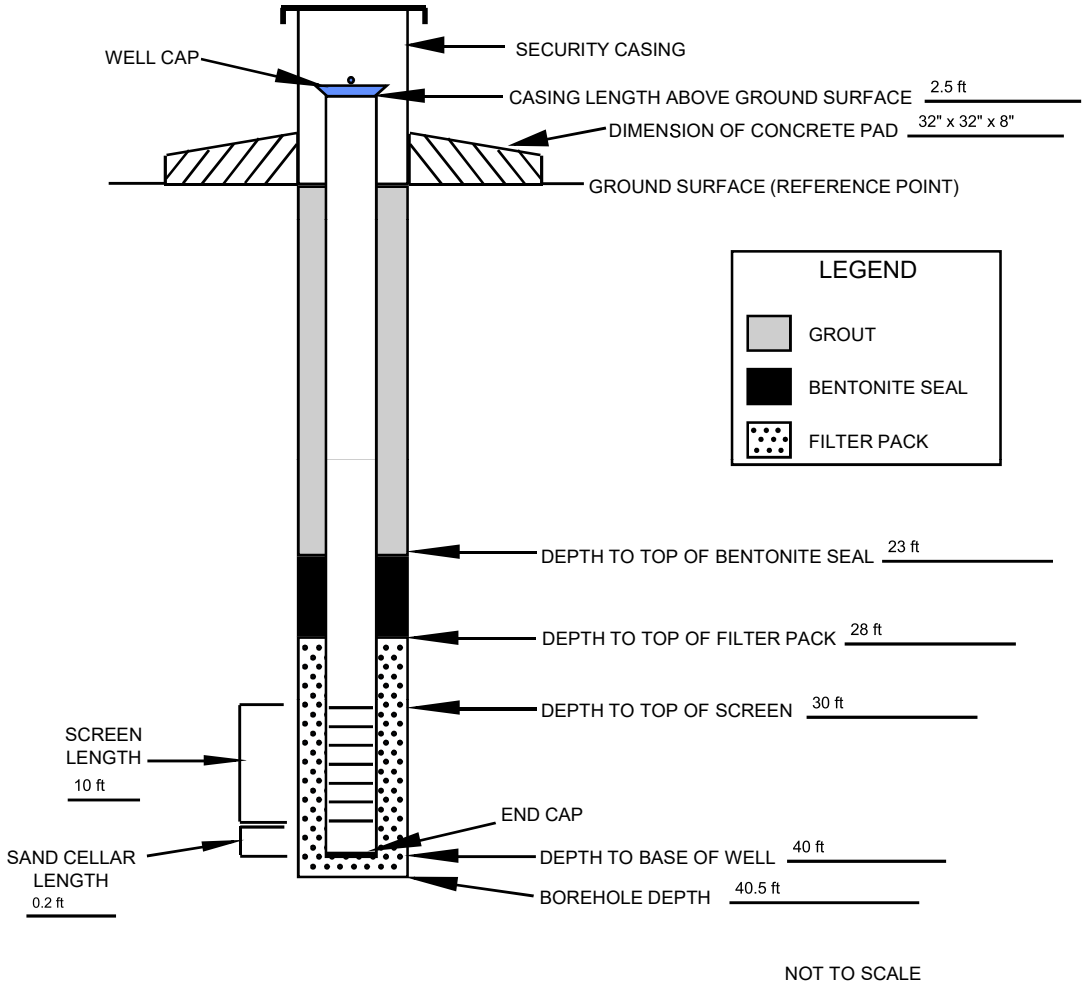
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-LGIA-MW05
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-LGIA-MW05

WELL CONSTRUCTION START DATE: 5/17/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

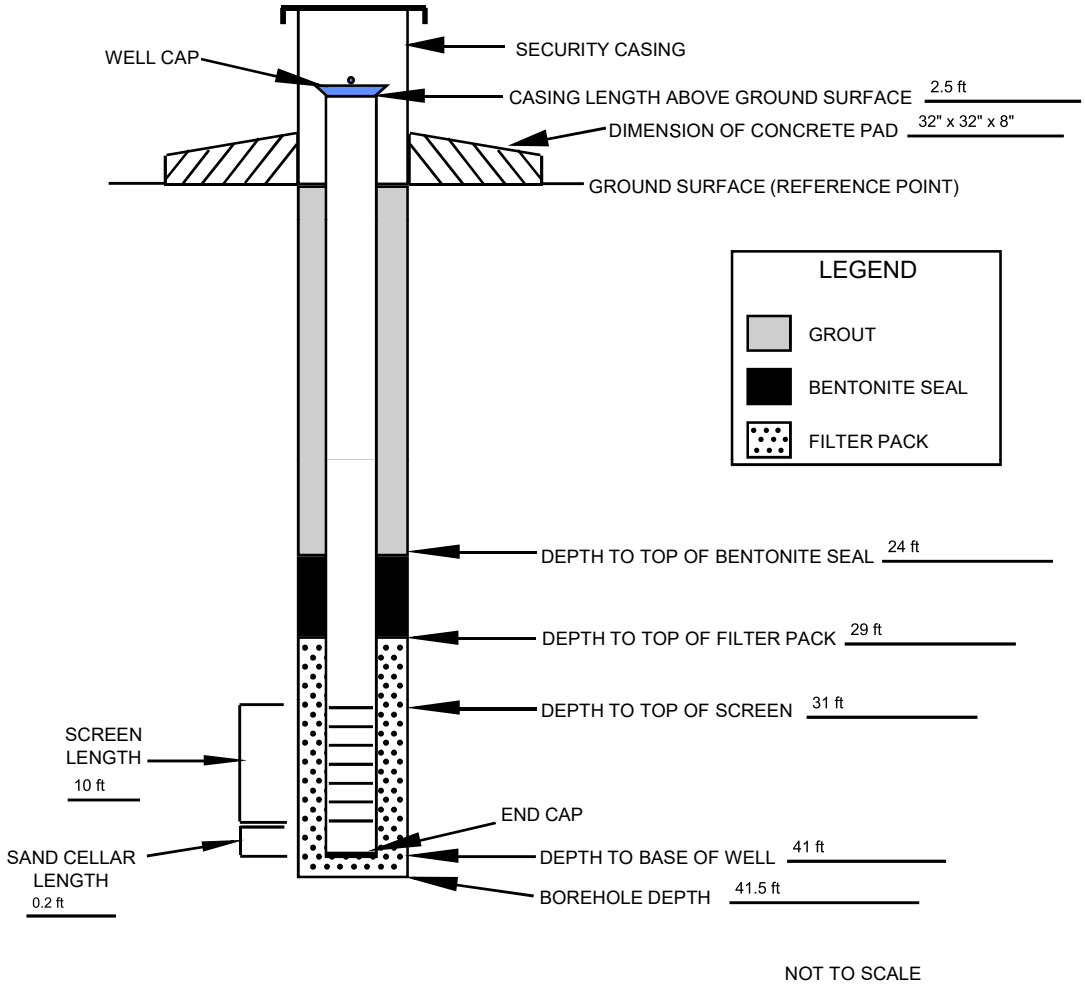
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-UGIA-MW06
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-UGIA-MW06

WELL CONSTRUCTION START DATE: 5/16/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

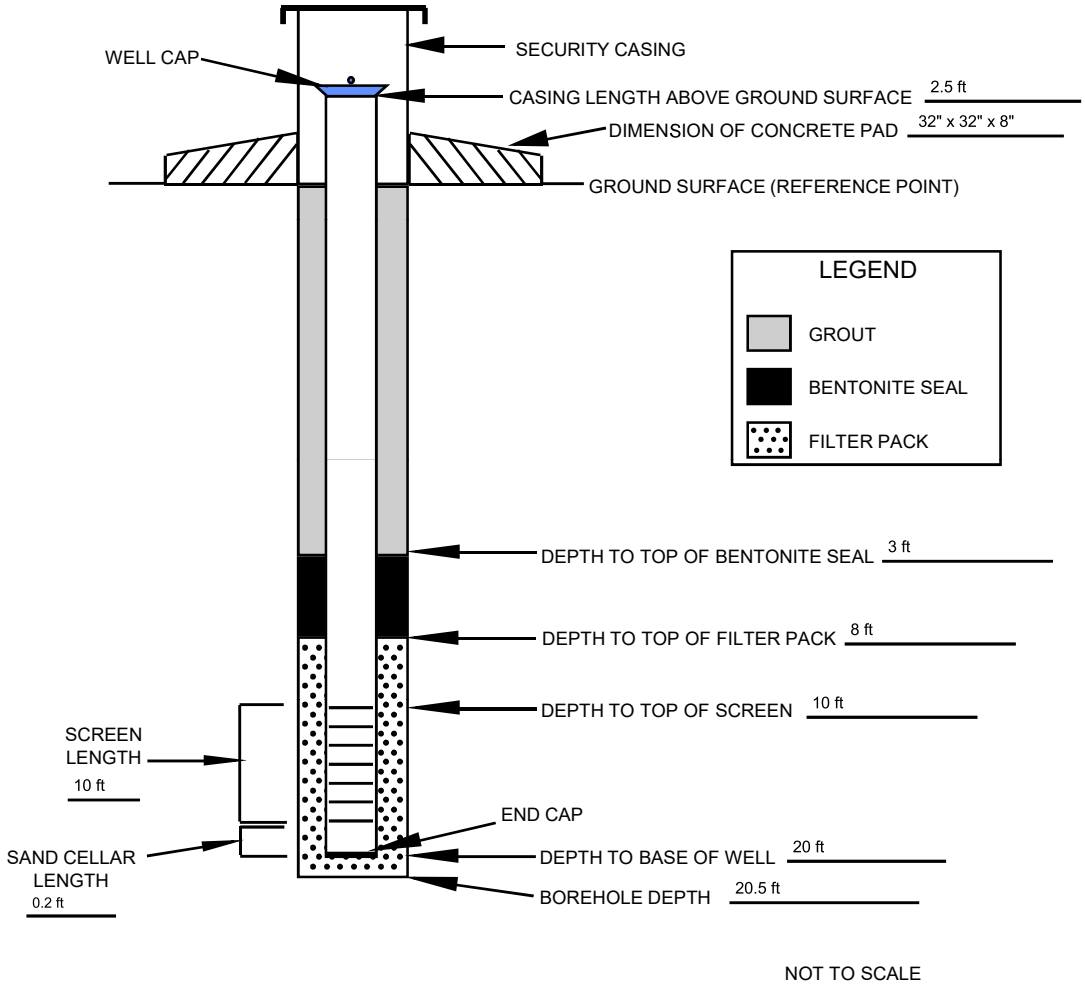
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

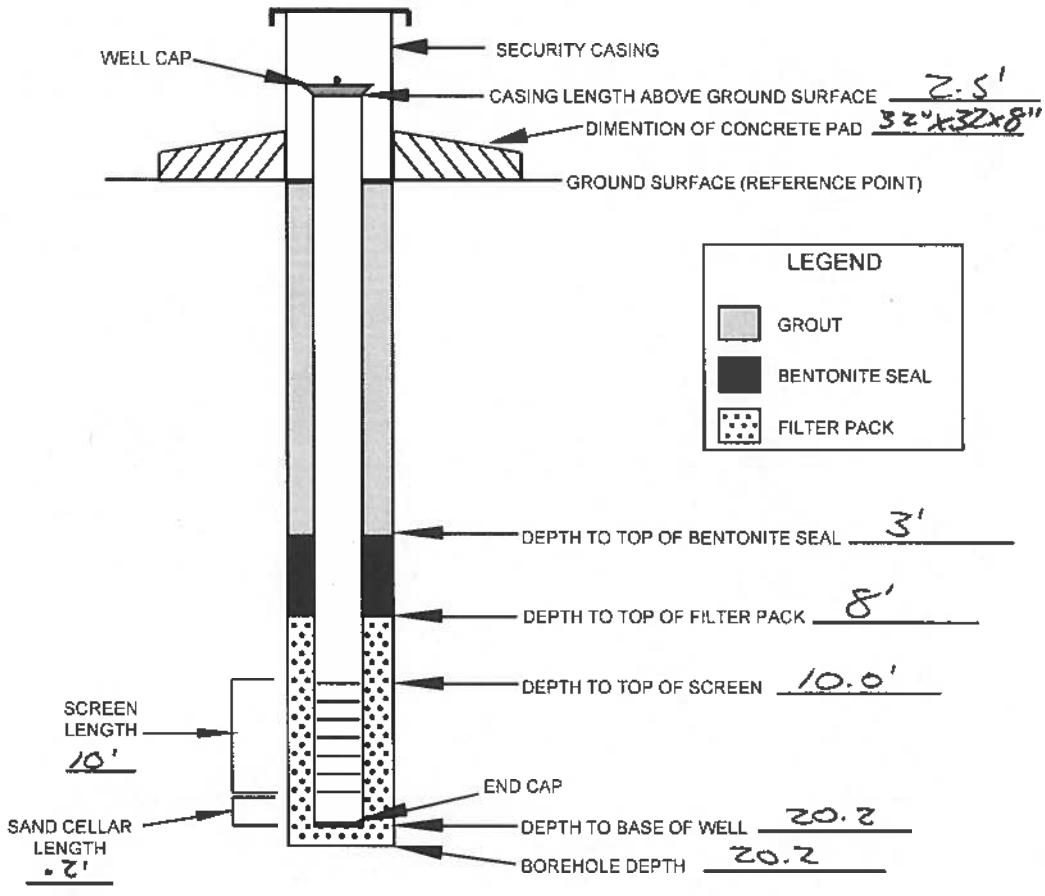
DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepeth
DRILLING CONTRACTOR: J. Finnell
DRILLING TECHNIQUE: HSA
AUGER SIZE AND TYPE: 4.25 ID
BOREHOLE IDENTIFICATION: 218-RPA-UGIA-ML07
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: UGIA-ML07
WELL CONSTRUCTION START DATE: 4.9.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: PVC Sched 40 - .01
SCREEN DIAMETER: 2" Slotted
STRATUM-SCREENED INTERVAL (FT): 10'-20'
CASING MATERIAL: PVC Sched 40
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: 16/30
AMOUNT OF FILTER PACK USED: 5 bags - 250 lbs
TYPE OF BENTONITE: Medium Chips
AMOUNT BENTONITE USED: 1.5 bags 75 lbs
TYPE OF CEMENT: Type I Portland
AMOUNT CEMENT USED: 1.5 bags 75 lbs
GROUT MATERIALS USED: 6% Bentonite
DIMENSIONS OF SECURITY CASING: 4" x 4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
STRATUM-SCREENED INTERVAL (FT): 10'-20'
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: J. Finnell
INSTALLATION OBSERVED BY: A. Hedgepeth

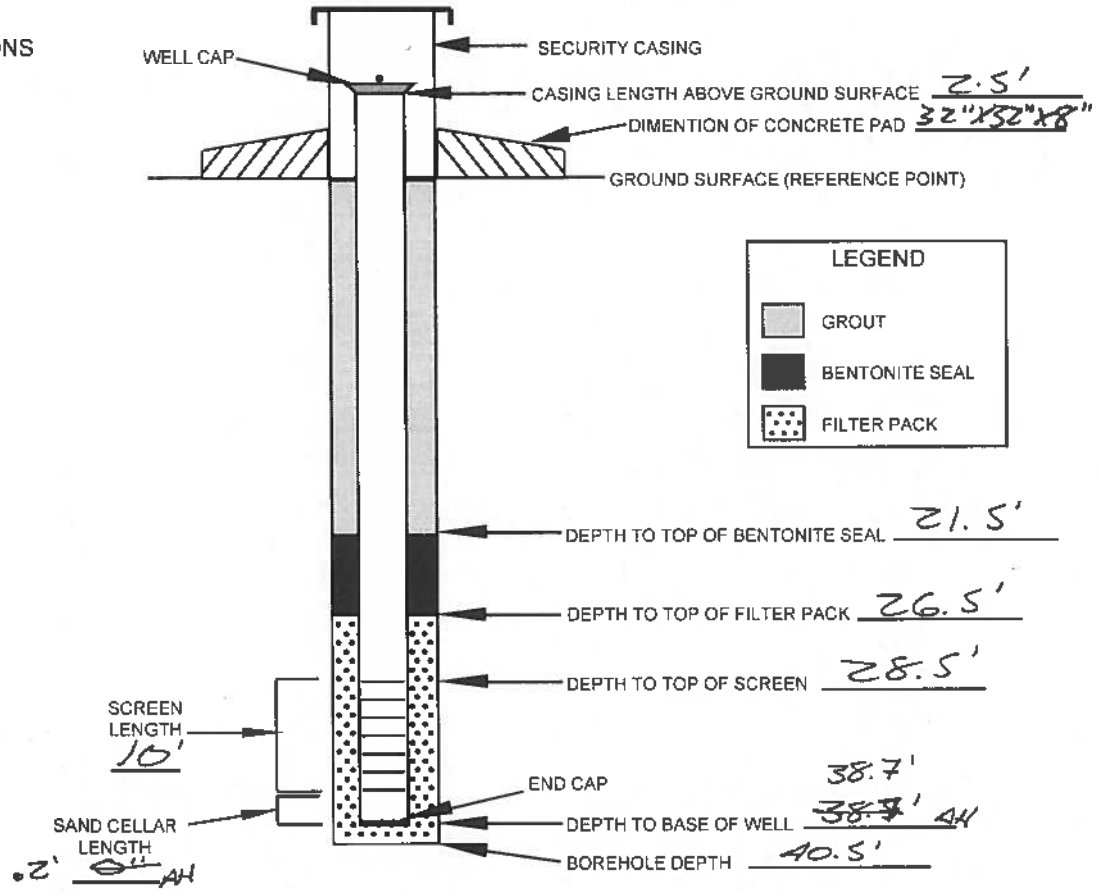
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepeth
DRILLING CONTRACTOR: J. Timmel
DRILLING TECHNIQUE: HSA c/ SP
AUGER SIZE AND TYPE: 4.25" ID
BOREHOLE IDENTIFICATION: 218-BPA-LGIA-mw08
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: LGIA-mw08
WELL CONSTRUCTION START DATE: 4.3.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: PVC Sched 40 .01 slotted
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 28.5-38.5'
CASING MATERIAL: PVC Sched 40
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: 16/30
AMOUNT OF FILTER PACK USED: 5 bags 250 lbs
TYPE OF BENTONITE: Medium ~~Chips~~ AH 1/4 pellets - Envirotech
AMOUNT BENTONITE USED: 1.5 bags 75 lbs
TYPE OF CEMENT: Type I - Portland
AMOUNT CEMENT USED: .5 bags 25 lbs
GROUT MATERIALS USED: 5% bentonite
DIMENSIONS OF SECURITY CASING: 4"x4"
TYPE OF WELL CAP: 5-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: J. Timmel
INSTALLATION OBSERVED BY: A. Hedgepeth

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-UGIA-MW09
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-UGIA-MW09

WELL CONSTRUCTION START DATE: 7/20/18
WELL CONSTRUCTION COMPLETE DATE:

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 100 lbs

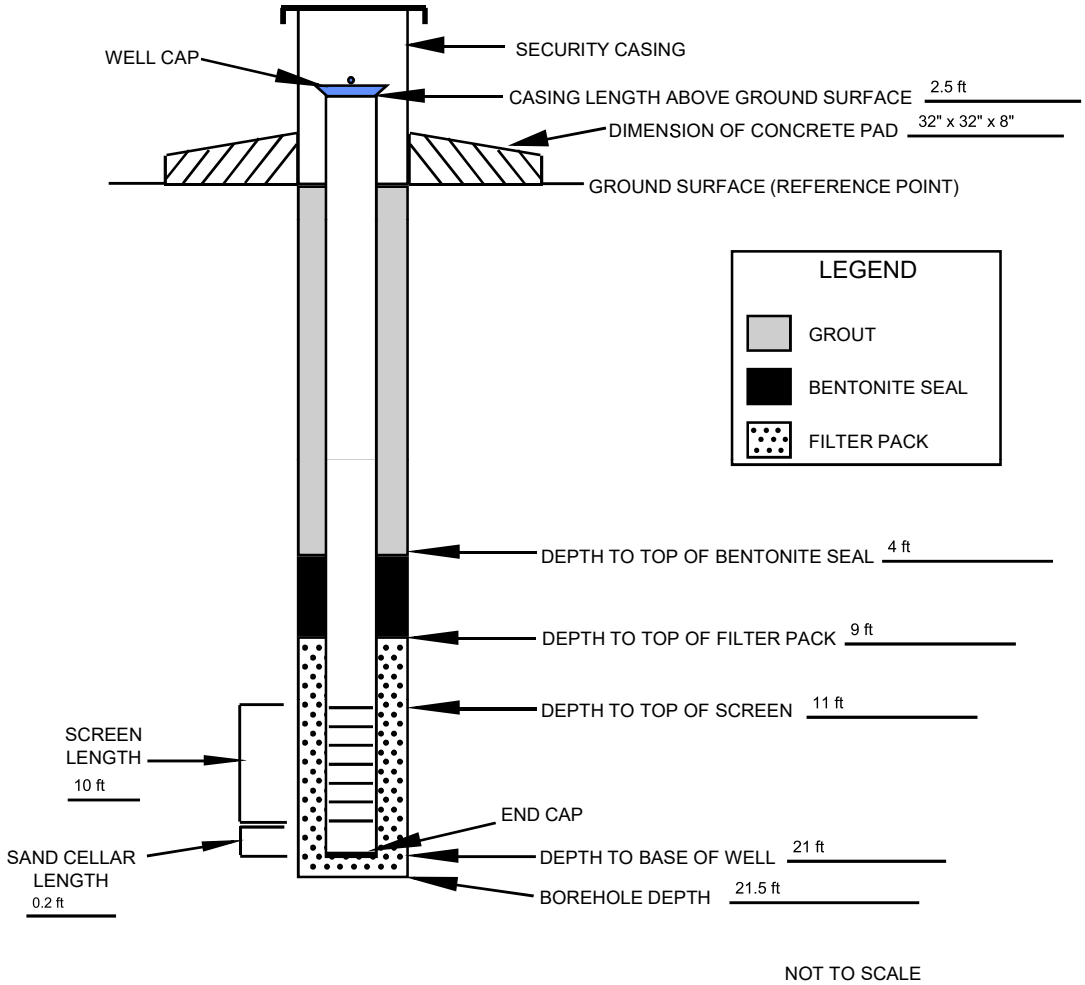
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-LGIA-MW10
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-LGIA-MW10

WELL CONSTRUCTION START DATE: 7/17/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

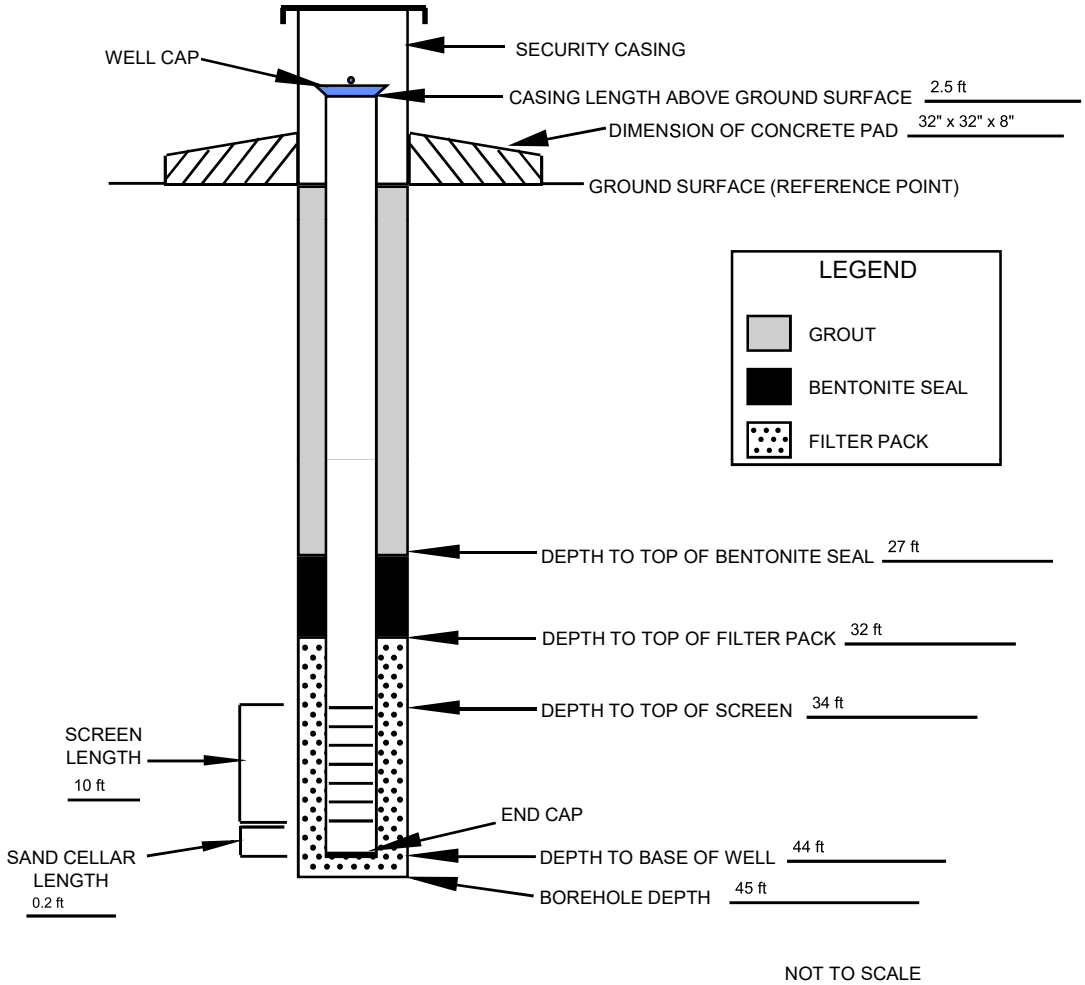
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-UGIA-MW11
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-UGIA-MW11

WELL CONSTRUCTION START DATE: 7/21/18
WELL CONSTRUCTION COMPLETE DATE:

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 100 lbs

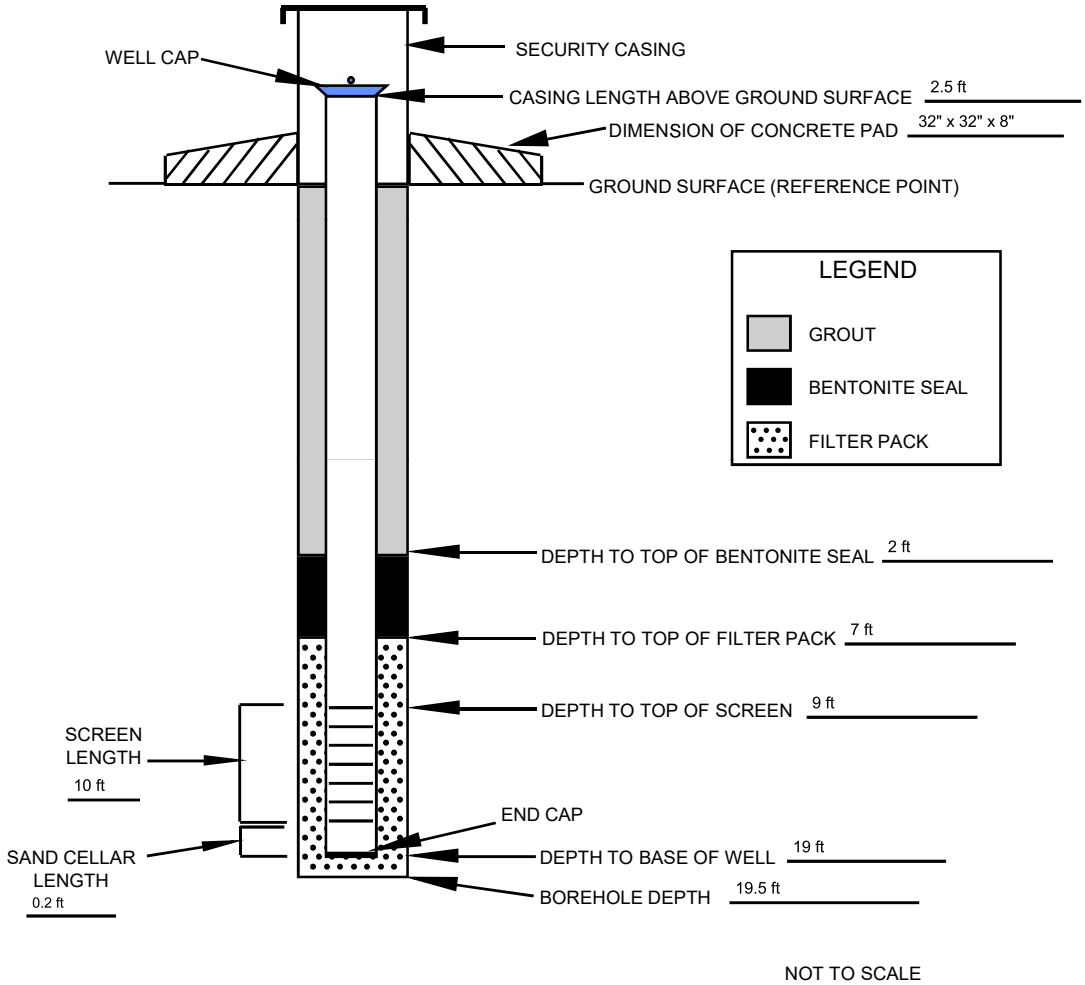
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-BPA-UGIA-MW12
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-BPA-UGIA-MW12

WELL CONSTRUCTION START DATE: 7/20/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 100 lbs

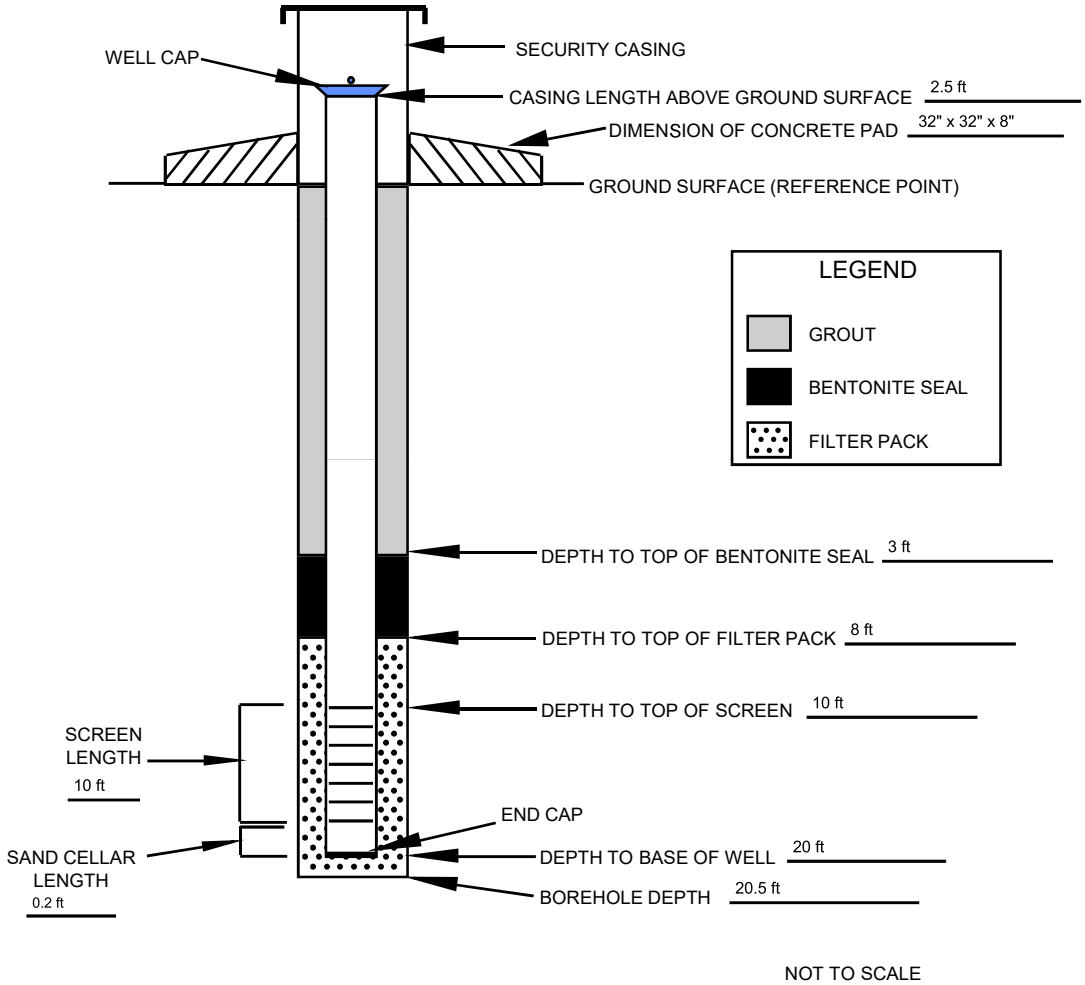
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 218-DS-LG1A-MW01
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-19-18

LOCATION: 218-DS-LG1A-MW01 DATE INSTALLED: 5-15-18

TOTAL DEPTH (FTOC) 45.16ft CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 45.16 ft.

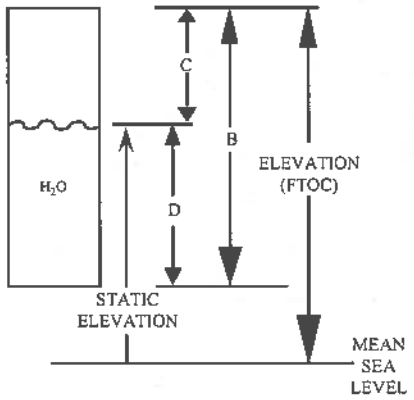
Measured Water Level Depth (C) 13.80 ft.

Length of Static Water Column (D) (B) 45.16 - (C) 13.80 = 31.36 ft. Pumping

Casing Water Volume (A) .16 x (D) 31.36 = 5.02 gal

Total Purge Volume = 510 (gal)

Measured Well Depth After Development (B) 45.16 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
10:30		3gpm	—	—	—	—	—	Surging
Vigorously Surged with pump inlet at various intervals of the screen.								
13:00		3gpm	450	6.96	2.472	11.54	58	
13:05			465	6.95	2.471	11.54	46.7	
13:10			480	6.95	2.473	11.54	12.1	
13:15			495	6.95	2.475	11.54	9.0	
13:20		3gpm	510	6.95	2.476	11.54	6.0	
					Well completed			
					BMH	5-19-18		

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-DS LGU-MW02
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16027 DATE: 5-19-18

LOCATION: 21B-DS-LGU-MW02 DATE INSTALLED: 5-15-18

TOTAL DEPTH (FTOC) 45.35 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 45.35 ft.

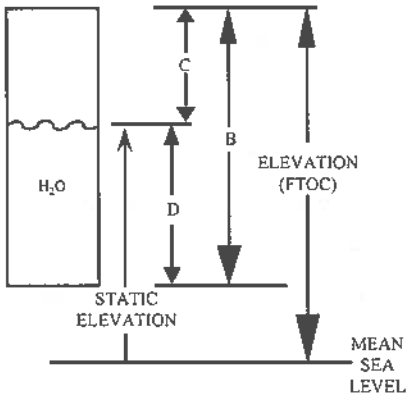
Measured Water Level Depth (C) 13.81 ft.

Length of Static Water Column (D) _____ (B) - _____ (C) = 31.54 ft. Pumping

Casing Water Volume .16 (A) x _____ (D) = 5.05 gal

Total Purge Volume = 70 (gal)

Measured Well Depth After Development (B) 45.35 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
12:05	Surging begins							Surging
13:15	13.90	0.7 gpm	49	7.22	3.391	11.72	75.8	
13:20	13.91	↓	52.5	7.23	3.415	11.71	16.8	↓
13:25	13.90	↓	56	7.23	3.423	11.70	21.3	↓
13:30	13.91	↓	59.5	7.23	3.421	11.72	34.3	↓
13:35	13.91	.7 gpm	63	7.23	3.426	11.71	4.8	
13:40	13.91	.7 gpm	66.5	7.23	3.429	11.71	1.87	
13:45	13.91	0.7 gpm	70	7.23	3.430	11.72	1.24	
				well completed		5-19-18		

WELL DEVELOPMENT RECORD

218-DS-
WELL/PIEZOMETER ID LGIA-MW03
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-20-18

LOCATION: 218-DS-LGIA-MW03 DATE INSTALLED: 5/15/18

TOTAL DEPTH (FTOC) 45.46 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL +2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe Waterra Pumping

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 45.46 ft.

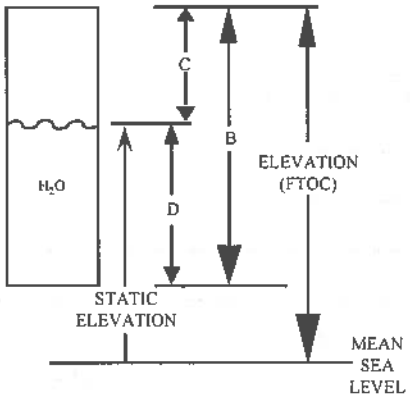
Measured Water Level Depth (C) 13.64 ft.

Length of Static Water Column (D) 45.56 (B) - 13.64 (C) = 31.82 ft. Pumping

Casing Water Volume .16 (A) x 31.82 (D) = 5.091 gal

Total Purge Volume = 395 (gal)

Measured Well Depth After Development (B) 45.46 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
8:30		3gpm	0	—	—	—	—	Surging
Vigorously surging throughout screened interval.								sulfur odor
1030	13.68	3gpm	275	7.16	2.468	11.89	28.9	Surging
1035	13.67	3gpm	290	7.13	2.467	11.87	28.4	Surging
1040	13.68	3gpm	305	6.92	2.467	11.85	28.2	Surging
1045	13.65	2gpm	315	6.98	2.466	11.85	33.4	Surging
1050	13.67	2gpm	325	7.13	2.465	11.85	29.7	Surging
1055	13.68	2gpm	335	7.15	2.465	11.85	36.1	Surging
1100	13.68	2gpm	345	7.16	2.465	11.85	40.2	Surging
1105	13.69	2gpm	355	7.09	2.463	11.90	36.4	Surging
1110	13.68	2gpm	365	7.06	2.460	11.95	57.8	Surging

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 218-DS-LGIA-MW03
PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
1115	13.67	2gpm	375	7.21	2.468	11.84	19.4	Surged
1120	13.17	2 gpm	385	7.23	2.468	11.83	17.9	Surged
1125	13.68	2gpm	395	7.26	2.468	11.82	13.5	Surged
Development Complete								

ABC

5/20/18

WELL DEVELOPMENT RECORD

218-DS
WELL/PIEZOMETER ID LGIA-MW04
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 5-20-18

LOCATION 218-DS-LGIA-MW04 DATE INSTALLED: _____

TOTAL DEPTH (FTOC) 44.70 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 44.70 ft.

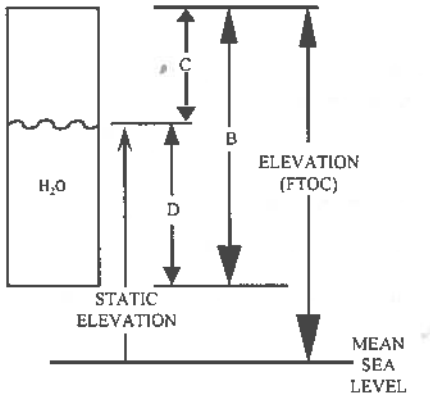
Measured Water Level Depth (C) 13.36 ft.

Length of Static Water Column (D) 44.70 (B) - 13.36 (C) = 31.34 ft. Pumping

Casing Water Volume .16 (A) x 31.34 (D) = 5.014 gal

Total Purge Volume = 875 (gal)

Measured Well Depth After Development (B) 44.76 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
8:50	Begin Surging							Surged
9:50	13.42	.7gpm	42	5.72	1.556	12.09	>1000	
9:55	13.43		45.5	5.57	1.556	12.16	>1000	
10:00	13.42		49	6.09	1.589	12.10	>1000	
10:05	13.42		52.5	6.08	1.587	12.05	67.5	No
10:10			56	6.06	1.638	12.05	68	Surged
10:15			59.5	6.28	1.618	12.02	47	
10:20			63	6.06	1.649	12.08	52.8	
10:25	13.42	↓	66.5	4.84	1.593	12.10	31.8	
10:30	13.42	.7gpm	70	4.20	1.520	12.25	28.7	

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc
Exceeding Expectations

WELL/PIEZOMETER ID 21B-DS-LGIA-MW05
PAGE 1 of 1

PROJECT NAME: CHAP RI/FS PROJECT NO.: 477001 DATE: 4-8-18

LOCATION: 21B-DS-LGSA-MW05 DATE INSTALLED: 3-31-18

TOTAL DEPTH (FTOC) 46.22 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox + water

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI 98703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46.22 ft.

Measured Water Level Depth (C) 13.43 ft.

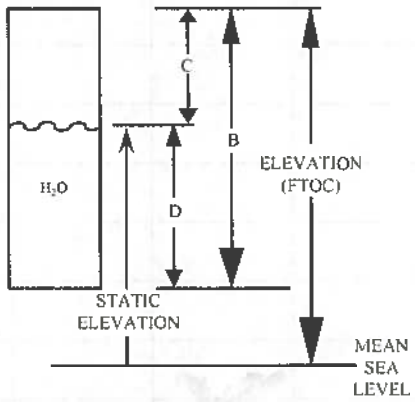
Length of Static Water Column (D) 46.22 (B) − 13.43 (C) = 32.89 ft.

Pumping

Casing Water Volume 0.16 (A) x 32.89 (D) = 5.26 gal

Total Purge Volume = 103 (gal)

Measured Well Depth After Development (B) 46.22 ft.



Purge started @ 1405

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1445	13.47	6.1 lpm	—	7.04	2.040	12.27	46.7	
1450	13.50		—	6.95	1.957	11.87	30.7	
1455	13.52		—	6.89	1.965	11.82	31.0	
1500	13.55		—	6.86	1.964	11.80	18.4	
1503	13.56		—	6.86	1.955	11.76	7.97	
1506	13.57		—	6.87	1.959	11.78	5.18	
1509	13.58		103	6.86	1.962	11.82	1.90	

4/8/18

WELL DEVELOPMENT RECORD

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL/PIEZOMETER ID 21B-DS - MGIA-Muck
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: AT3001 DATE: 4.7.18

LOCATION: Tract 21B-DS DATE INSTALLED: 3/31/18

TOTAL DEPTH (FTOC) 46.20 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL ~2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox + water

EQUIPMENT NUMBERS:

pH Meter ~~0SG10AG1ZA~~ 13K100402 / 082111 EC Meter ← Thermometer ← Turbidity Meter 08537192

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46.20 ft.

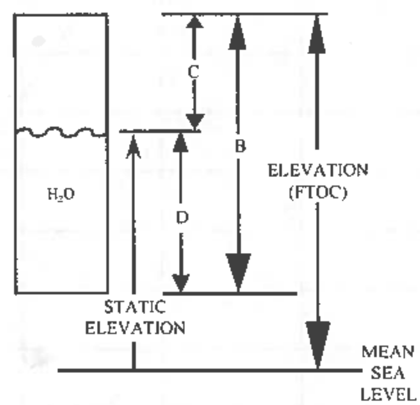
Measured Water Level Depth (C) 13.66 ft.

Length of Static Water Column (D) 46.2 (B) - 13.66 (C) 32.54 ft. Pumping

Casing Water Volume .16 (A) x 32.54 (D) = 5.2 gal

Total Purge Volume = 145 (gal)

Measured Well Depth After Development (B) 46.20 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1400	13.68	1GPM	5	6.29	1.821	11.96	>1000	Surged
1405	13.68	↓	10	6.48	1.944	11.54	>1000	Surged
1410	13.68		15	6.81	1.991	11.30	>1000	Surged
	— Take break from readings, continue Surge/pump —							
1440	13.68	1 GPM	45	7.13	2.144	12.49	284	Surged
	— Take Break — Continue Surge/pump —							
1530	13.68	1 GPM	95	6.77	2.054	12.12	98.6	Surged
1540	13.68	↓	105	6.83	2.045	11.76	60.2	Surged
1550	13.68		115	6.69	2.044	11.80	47.4	Surged
1600	13.69		125	6.76	2.035	11.53	30.9	
1605	13.68		~~125~~ 130	6.78	2.106	11.64	22.5	Surged

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 21B-DS-LGIA-MW06

PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
1610	13.68	1 GPM	135	6.78	2.089	11.52	18.9	
1615	13.69		140	6.79	2.98	11.60	12.3	
1620	13.68		145	6.79	2.113	11.66	11.6	
		Development finished at			21B-DS-LGIA-MW06			

4.7.18

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-DS-LGIA-MW07
PAGE 1 of 2

PROJECT NAME: CHAAP PROJECT NO.: 453001 DATE: 4.7.18

LOCATION: Tract 21B-DS DATE INSTALLED: 3/31/18

TOTAL DEPTH (FTOC) 46.75' CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL ~2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox + Water

EQUIPMENT NUMBERS:

pH Meter 13K100402 EC Meter ← Thermometer ← Turbidity Meter 08537192
082111

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46.75 ft.

Measured Water Level Depth (C) 14.66 ft.

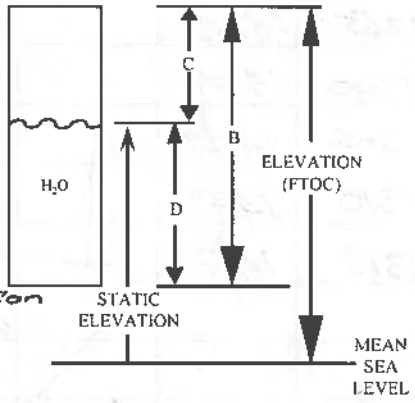
Length of Static Water Column (D) 46.75 (B) - 14.66 (C) = 32.09 ft. Pumping

Casing Water Volume .16 (A) x 32.09 (D) = 5.13 gal

~100g used for Installation

Total Purge Volume = 255 (gal)

Measured Well Depth After Development (B) 47.02 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
905	14.80	1 GPM	5	6.71	2.014	11.38	259	
910	14.78	"	10	7.39	1.956	10.87	>1000	Surged
915	14.76	"	15	7.49	1.951	10.68	>1000	Surged
-Break from readings - Surging / pumping Continued								
1000	14.74	1 GPM	60	7.97	1.992	12.10	>1000	Surged
-Break from readings - surge / pump Continued								
1030	14.74	1 GPM	90	7.38	2.062	11.96	>1000	Surged
1035	14.78	"	95	7.08	2.080	11.63	>1000	Surged
1040	14.78	"	100	6.99	2.045	12.01	>1000	Surged
		- Took break from readings -						
1100	14.78	1 GPM	120	6.99	2.133	11.98	793	Surged

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD (con't)

WELL/PIEZOMETER ID 21B-DS-LGIA-MW07

PAGE 2 of 2

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm	Temp. (deg C)	Turbidity (NTU)	Notes
	- Break		Com readys		- Surge	pump Contines -		
1125	14.78	1 GPM	145	6.95	2.173	12.35	566	Surged
1200	14.78		180	6.99	2.167	12.39	406	Surged
1205	14.78		185	6.94	2.086	11.88	>1000	Surged
1215	14.78		195	6.91	1.740	12.35	156	Surged
1225	14.78		~~200~~ 205	6.90	2.073	11.96	476	Surged
1235	14.79		215	6.90	2.074	11.83	206	Surged
1245	14.78		225	6.89	2.072	11.81	125	Surged
1255	14.78		235	6.90	2.081	11.93	48.6	Surged
1300	14.79		240	6.88	2.080	11.81	23.0	Surged
1305	14.78		245	6.87	2.078	11.95	19.3	Surged
1310	14.79		250	6.88	2.084	11.79	21.6	Surged
1315	14.78		255	6.86	2.076	11.83	17.8	Surged
			End of Dev at 21B-DS-LGIA-MW07					
				[signature]	4-7-18			

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-DS-UGIA-MW08
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-22-18

LOCATION: 21B-DS-UGIA-MW08 DATE INSTALLED: 7-19-18

TOTAL DEPTH (FTOC) 22.65 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter EC Meter Thermometer Turbidity Meter

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.65 ft.

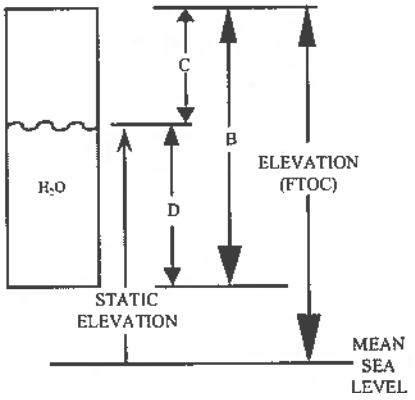
Measured Water Level Depth (C) 15.92 ft.

Length of Static Water Column (D) 22.65 (B) - 15.92 (C) = 6.73 ft. Pumping

Casing Water Volume .16 (A) x 6.73 (D) = 1.08 gal

Total Purge Volume = 90.3 (gal)

Measured Well Depth After Development (B) 22.65 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
13:15	15.92	-	Surged vigorously throughout screen interval					
14:45	16.10	0.86gpm	77.4	6.89	1,877	13.23	85.7	
14:50	16.09	0.86gpm	81.7	6.88	1,873	13.24	20.2	
14:55	16.08	0.86gpm	86	6.92	1,830	12.21	15.7	
15:00	16.08	0.86gpm	90.3	6.95	1,822	12.18	8.89	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-DS-LGIA-MW09
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-22-18

LOCATION: 21B-DS-LGIA-MW09 DATE INSTALLED: 7-19-18

TOTAL DEPTH (FTOC) 45.87 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.57+

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☒ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 45.87 ft.

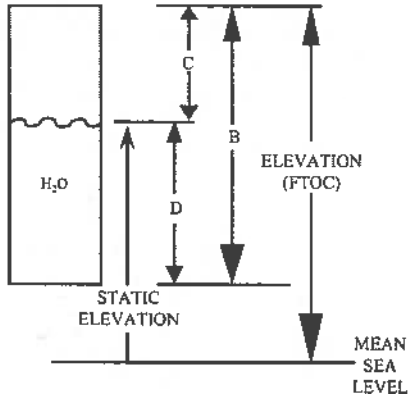
Measured Water Level Depth (C) 14.93 ft.

Length of Static Water Column (D) 45.87 (B) - 14.93 (C) = 30.94 ft. Pumping

Casing Water Volume .16 (A) x 30.94 (D) = 4.95 gal

Total Purge Volume = 151 (gal)

Measured Well Depth After Development (B) 45.87 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
12:00	14.93	-	Vigorously Surged Throughout screened interval					
13:45	15.18	1.3 gpm	137.5	6.79	2045	12.51	8.37	
13:50	15.18	1.3 gpm	144.1	6.96	2.038	11.94	8.18	
13:55	15.18	1.3 gpm	150.65	6.98	2.023	11.94	5.90	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-DS-UG1A-MW10
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-22-18

LOCATION: Tract 21B-DS DATE INSTALLED: 7-19-18

TOTAL DEPTH (FTOC) 22.31 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.57'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.31 ft.

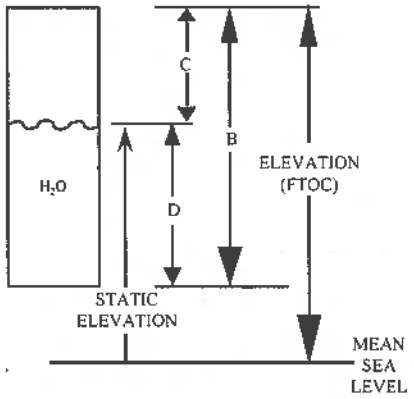
Measured Water Level Depth (C) 15.73 ft.

Length of Static Water Column (D) 22.31 (B) - 15.73 (C) = 6.58 ft. Pumping

Casing Water Volume .16 (A) x 6.58 (D) = 1.05 gal

Total Purge Volume = 51 (gal)

Measured Well Depth After Development (B) 22.31 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
14:00		0.6gpm	-	-	-	-	-	
14:05	15.98							
	Vigorously surged throughout screened interval							
15:15	15.98	0.6gpm	45	6.91	1.736	10.71	7.98	
15:20	15.98	0.6gpm	48	6.88	1.734	10.72	4.21	
15:25	15.98	0.6gpm	51	6.86	1.733	10.72	3.76	

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID: 218-DS-UG1A-MW11
PAGE 1 of

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-22-18

LOCATION: 218-DS-UG1A-MW11 DATE INSTALLED: 7-19-18

TOTAL DEPTH (FTOC) 24.20 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe

EQUIPMENT NUMBERS:

pH Meter EC Meter Thermometer Turbidity Meter

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 24.20 ft.

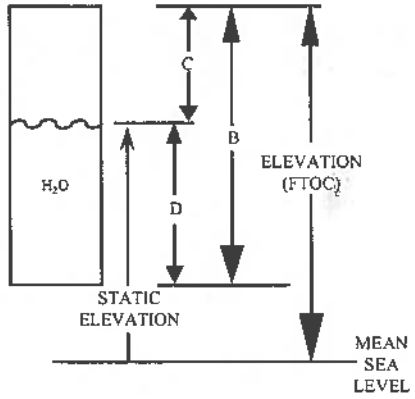
Measured Water Level Depth (C) 15.69 ft.

Length of Static Water Column (D) 24.20 (B) - 15.63 (C) = 8.57 ft. Pumping

Casing Water Volume .16 (A) x 8.57 (D) = 1.37 gal

Total Purge Volume = 97.6 (gal)

Measured Well Depth After Development (B) 24.20 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
15:50	15.69	1.22	-	-	-	-	-	-
Vigorously surged throughout screened interval								
17:30	15.75	1.22gpm	48.8	7.08	1.928	15.17	338	
17:35	15.75	1.22	54.9	7.20	1.835	15.27	236	
17:40	15.75	1.22	61	7.16	1.843	15.54	140	
17:45	15.75	1.22	67.1	7.09	1.891	16.99	110	
17:50	15.75	1.22	73.2	7.16	1.680	10.93	41.5	Hooked up to Flow through cell
17:55	15.75	1.22	79.3	6.80	1.696	10.44	32.7	
18:00	15.75	1.22	85.4	6.79	1.638	10.41	24.8	
18:05	15.75	1.22gpm	91.5	6.79	1.641	10.48	17.8	
18:10	15.75	1.22gpm	97.6	6.78	1.638	10.42	19.0	

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21B-DS-L61A-MW12
PAGE 1 of 1

PROJECT NAME: CHAAP PROJECT NO.: 16-027 DATE: 7-22-18

LOCATION: 21B-DS-L61A-MW12 DATE INSTALLED: 7-18-18

TOTAL DEPTH (FTOC) 46.93 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft.

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☑ Surge ☐ Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe _____

EQUIPMENT NUMBERS:

pH Meter _____ EC Meter _____ Thermometer _____ Turbidity Meter _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46.93 ft.

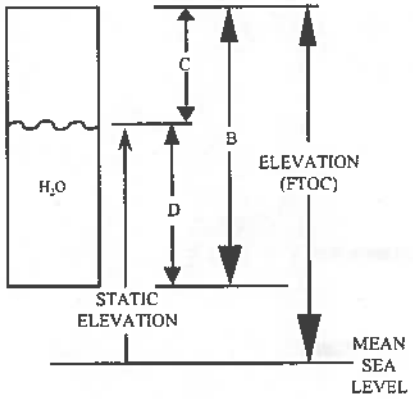
Measured Water Level Depth (C) 15.59 ft.

Length of Static Water Column (D) 46.93 (B) - 15.59 (C) = _____ ft. Pumping

Casing Water Volume .16 (A) x _____ (D) = _____ gal

Total Purge Volume = _____ (gal)

Measured Well Depth After Development (B) _____ ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
15:35	15.59	-	Vigorously	Surged	throughout	screen	interval	
16:40	15.64	0.56gpm	36.4	6.82	2.067	11.63	67.5	
16:45	15.64	0.56gpm	39.2	6.87	2.063	11.57	49.4	
16:50	15.64	0.56gpm	42	6.88	2.062	11.50	36	
16:55	15.64	0.56gpm	44.8	6.88	2.060	11.47	32.7	
17:00	15.64	0.56gpm	47.6	6.88	2.060	11.46	31.9	
17:05	15.64	0.56gpm	50.4	6.88	2.061	11.49	27.1	
17:10	15.64	0.56gpm	53.2	6.89	2.064	11.50	25	
17:15	15.64	0.56gpm	SC	6.89	2.067	11.55	19.8	
17:20	15.64	0.56gpm	58.8	6.89	2.061	11.34	17	
17:25	15.64	0.56gpm	61.6	6.89	2.067	11.44	16.3	

21B-DS-LGIA-MW13

WELL DEVELOPMENT RECORD

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL/PIEZOMETER ID 21B-DS-LGIA-MW13
PAGE ______ of ______

PROJECT NAME: CHAAP PROJECT NO. : 16-027 DATE: 8/6/18

LOCATION: Tract 21C DATE INSTALLED: 7/21/18

TOTAL DEPTH (FTOC) 47.04 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5'

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe ______

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe ______

EQUIPMENT NUMBERS:

pH Meter 11F100175 EC Meter 11F100175 Thermometer 11F100175 Turbidity Meter U64114X

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 47.04 ft.

Measured Water Level Depth (C) 15.95 ft.

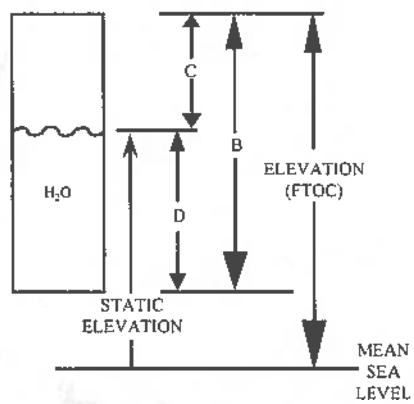
Length of Static Water Column (D) 47.04 (B) - 15.95 (C) = 31.09 ft.

Pumping

Casing Water Volume 0.16 (A) x 31.09 (D) = 4.97 gal

Total Purge Volume = 170 (gal)

Measured Well Depth After Development (B) 47.04 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
12:20	15.95	2gpm	—	—	—	—	—	—
12 Vigorously	Surged	throughout			Screened Interval			
1335	15.95	2gpm	150	6.41	2.055	10.88	20.4	
1340	15.95	2gpm	160	6.47	2.054	10.86	12.6	
1345	15.95	2gpm	170	6.55	2.052	10.84	9.4	

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW01
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW01

WELL CONSTRUCTION START DATE: 5/15/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

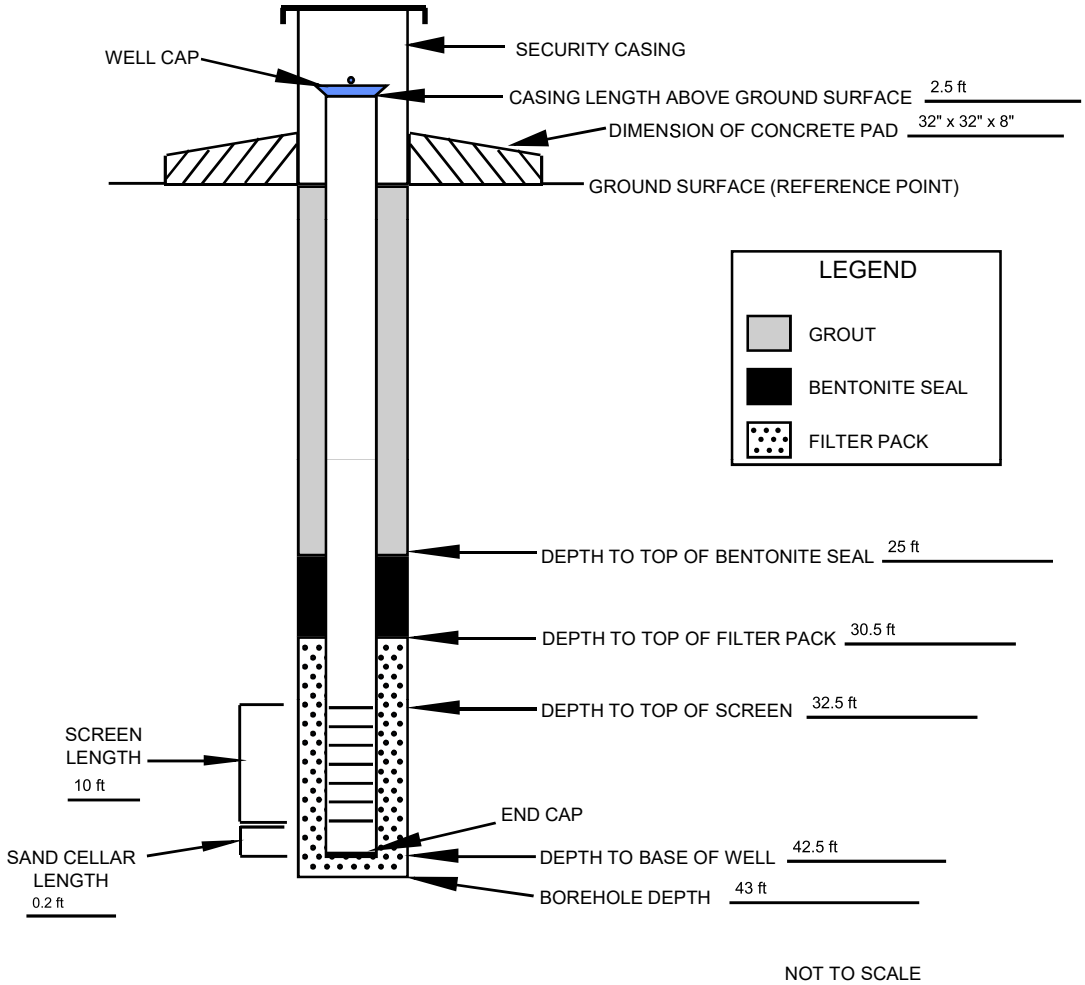
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW02
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW02

WELL CONSTRUCTION START DATE: 5/15/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

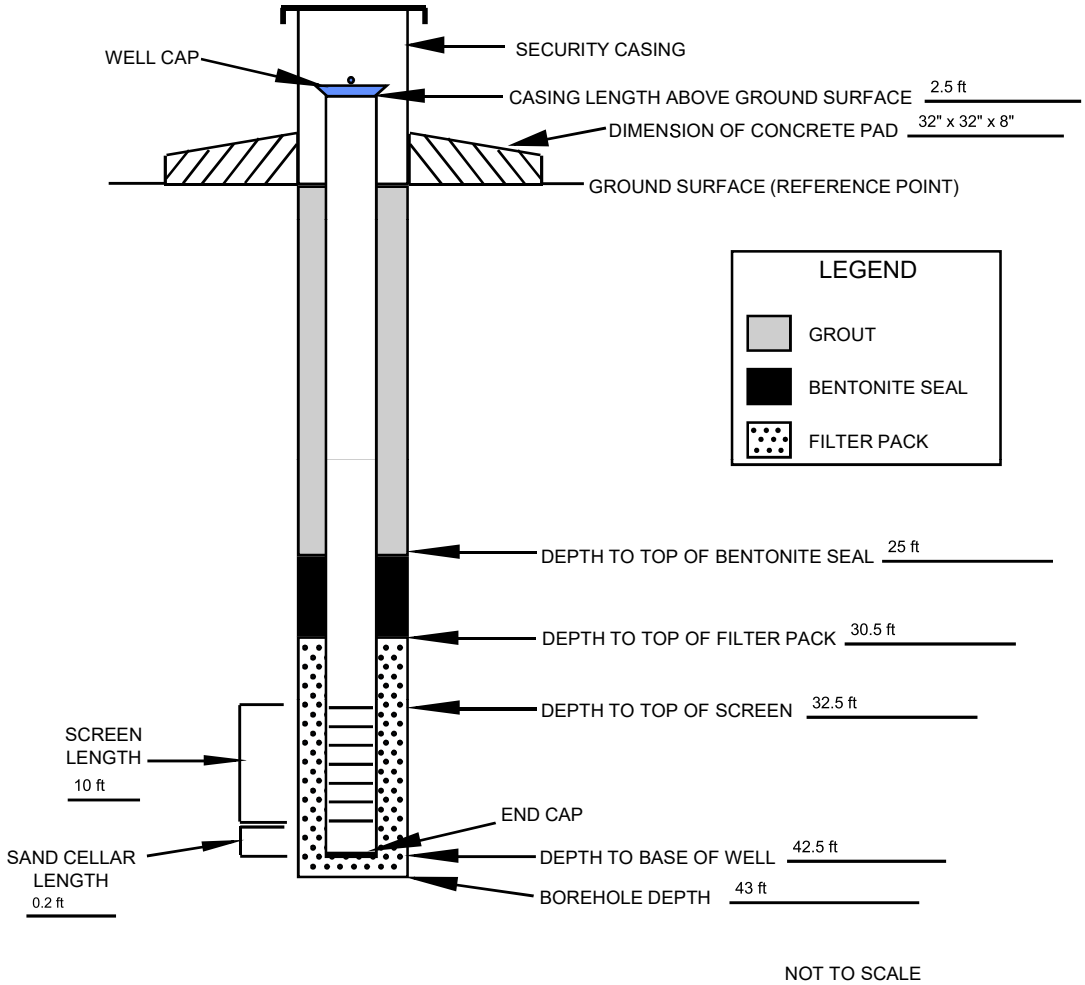
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW03
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW03

WELL CONSTRUCTION START DATE: 5/14/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

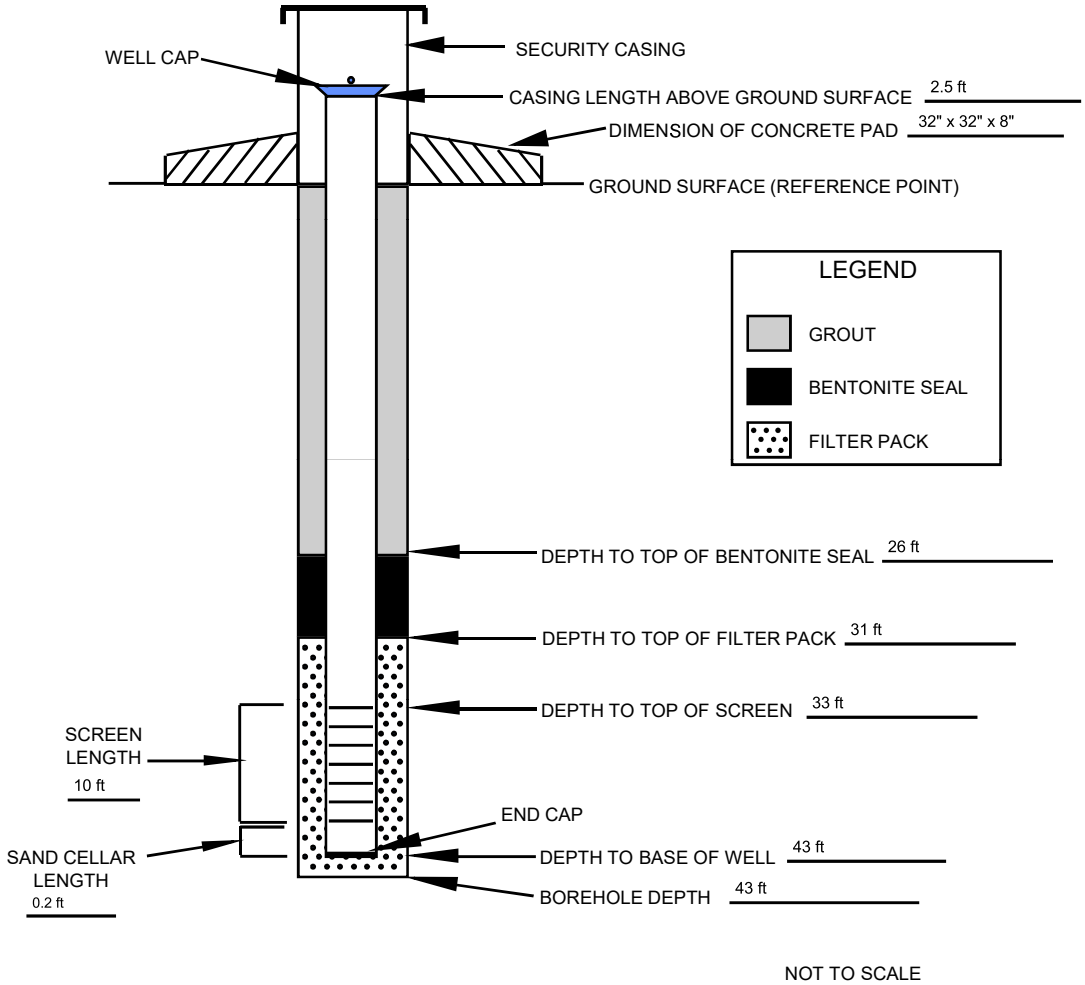
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW04
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW04

WELL CONSTRUCTION START DATE: 5/14/18
WELL CONSTRUCTION COMPLETE DATE: 5/22/2018

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

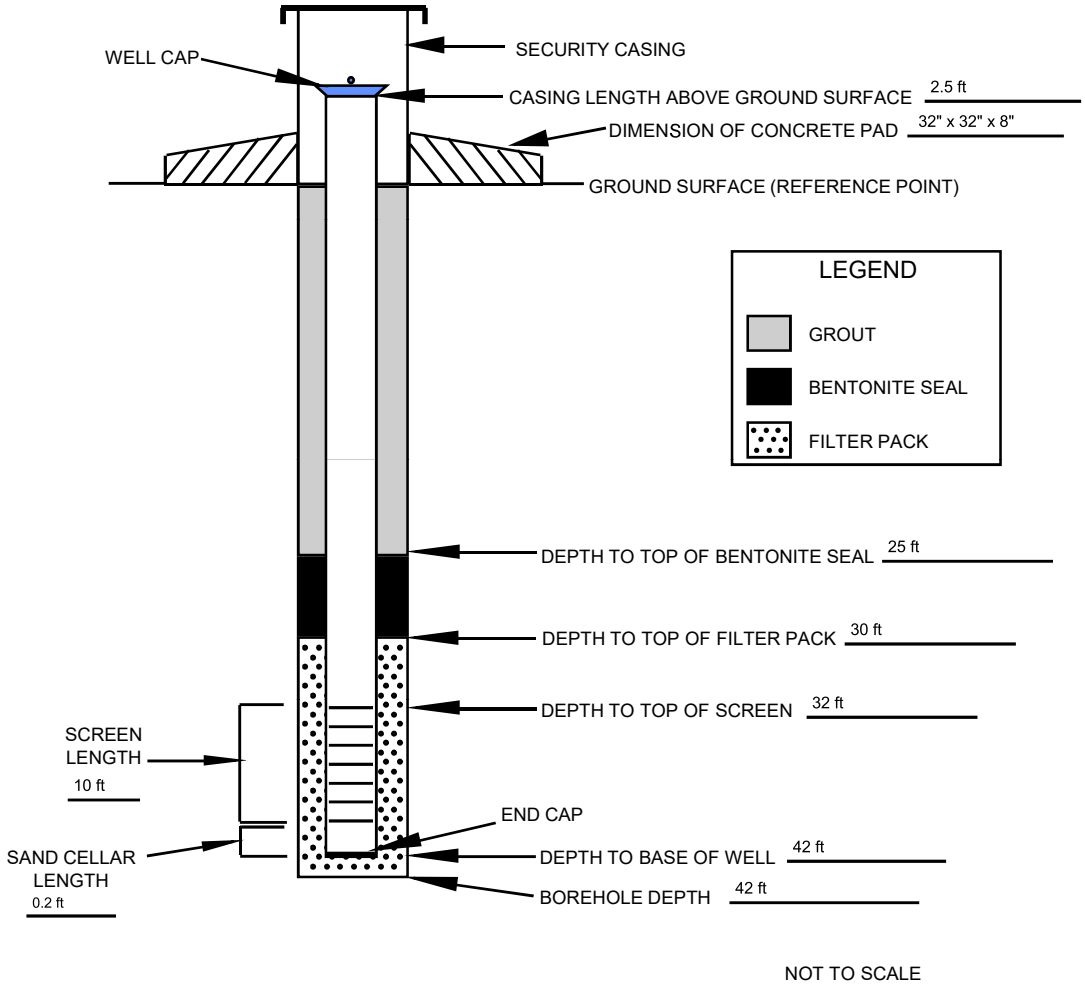
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW05
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW05

WELL CONSTRUCTION START DATE: 3/31/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

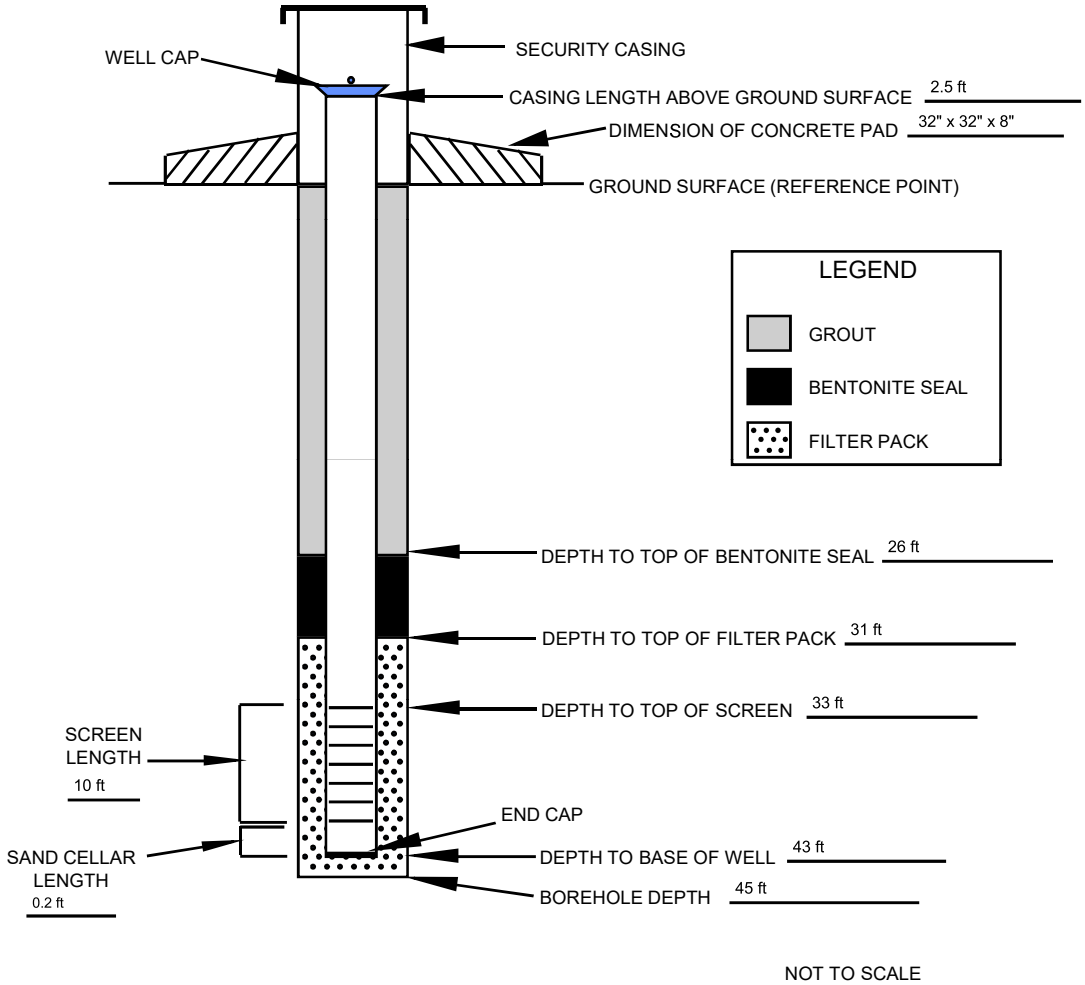
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW06
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW06

WELL CONSTRUCTION START DATE: 3/31/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

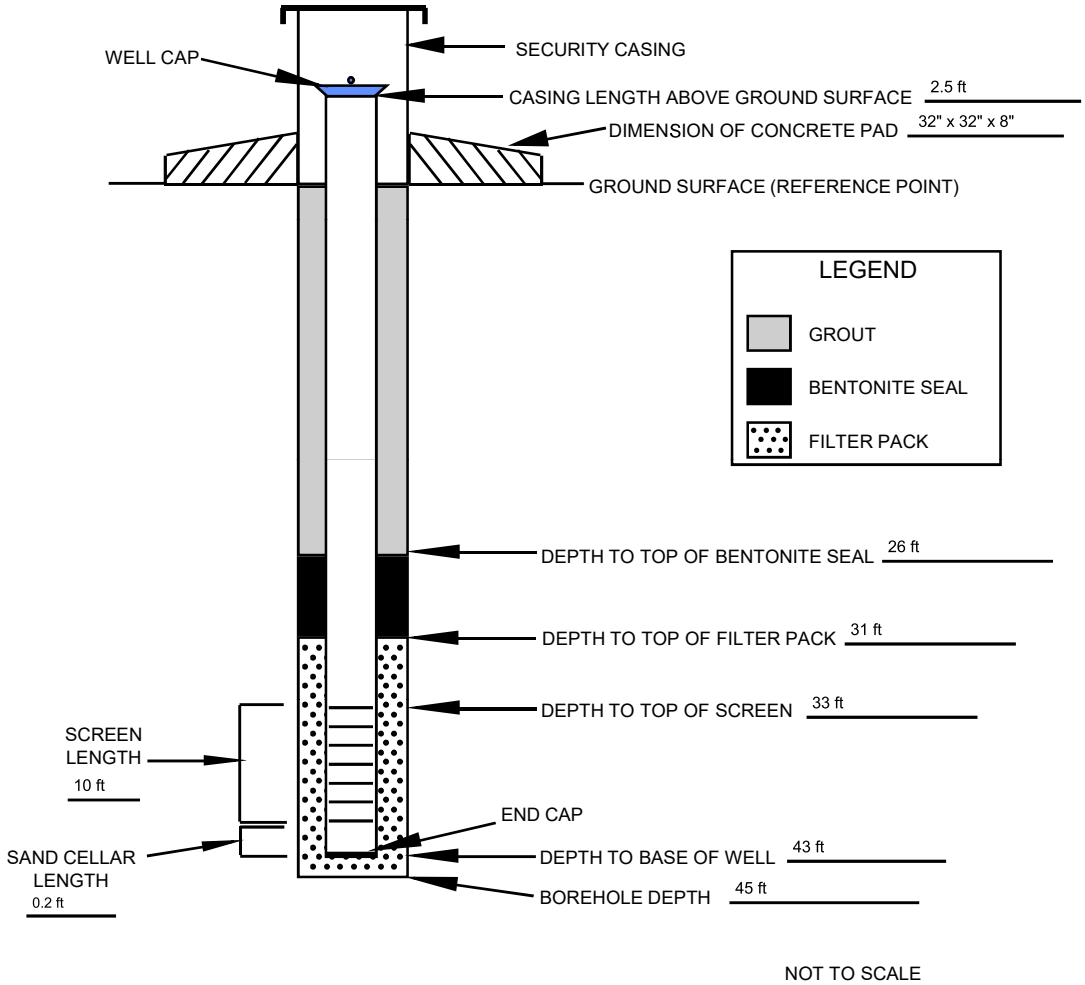
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW07
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW07

WELL CONSTRUCTION START DATE: 3/31/18
WELL CONSTRUCTION COMPLETE DATE: 4/2/18

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

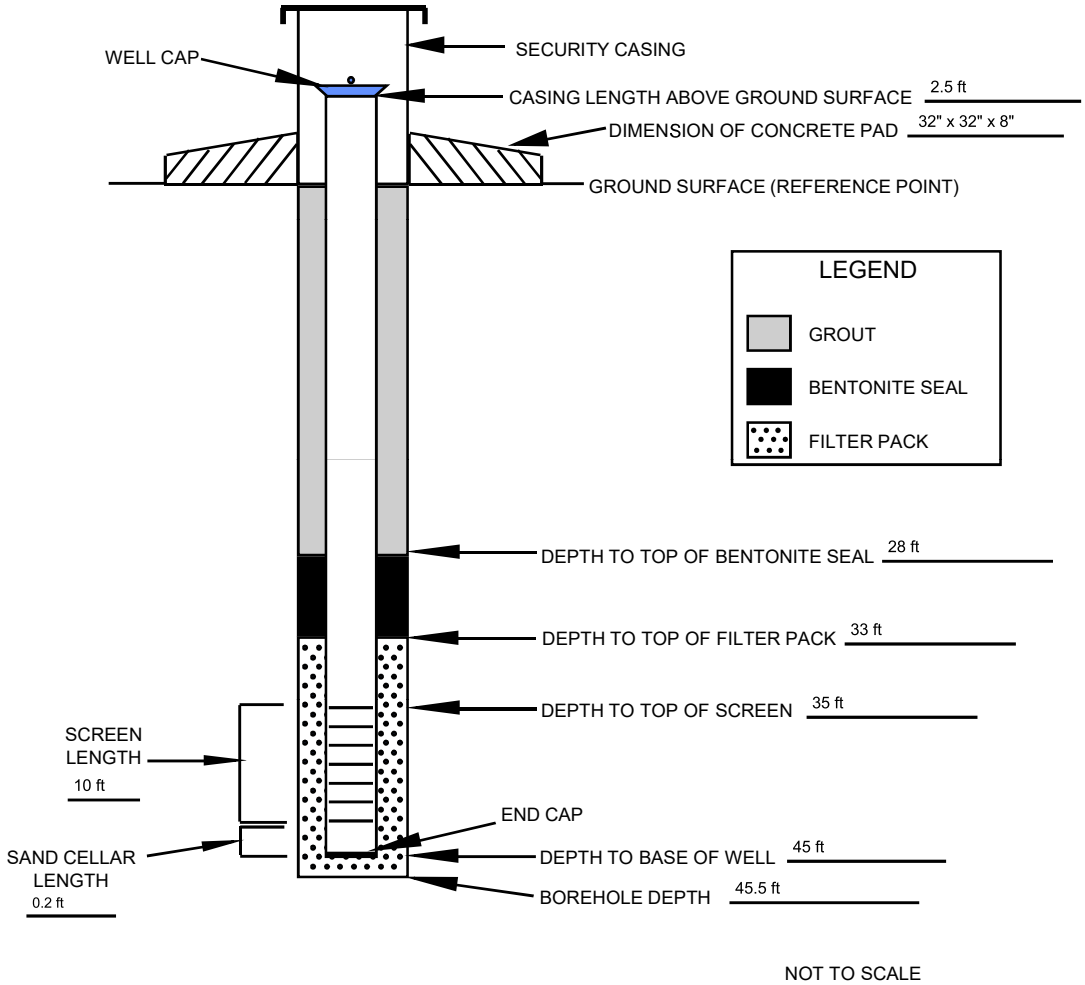
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-UGIA-MW08
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-UGIA-MW08

WELL CONSTRUCTION START DATE: 7/19/18
WELL CONSTRUCTION COMPLETE DATE:

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

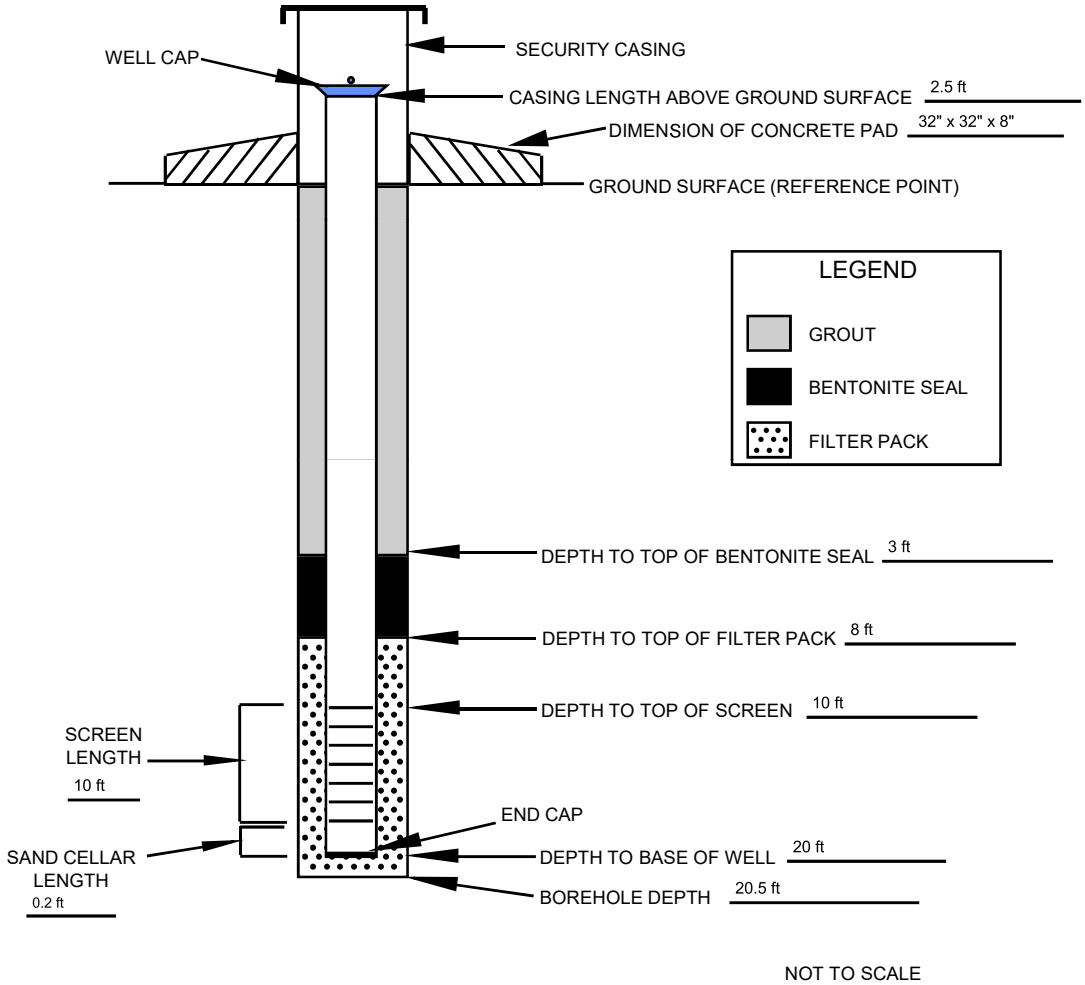
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW09
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW09

WELL CONSTRUCTION START DATE: 7/19/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

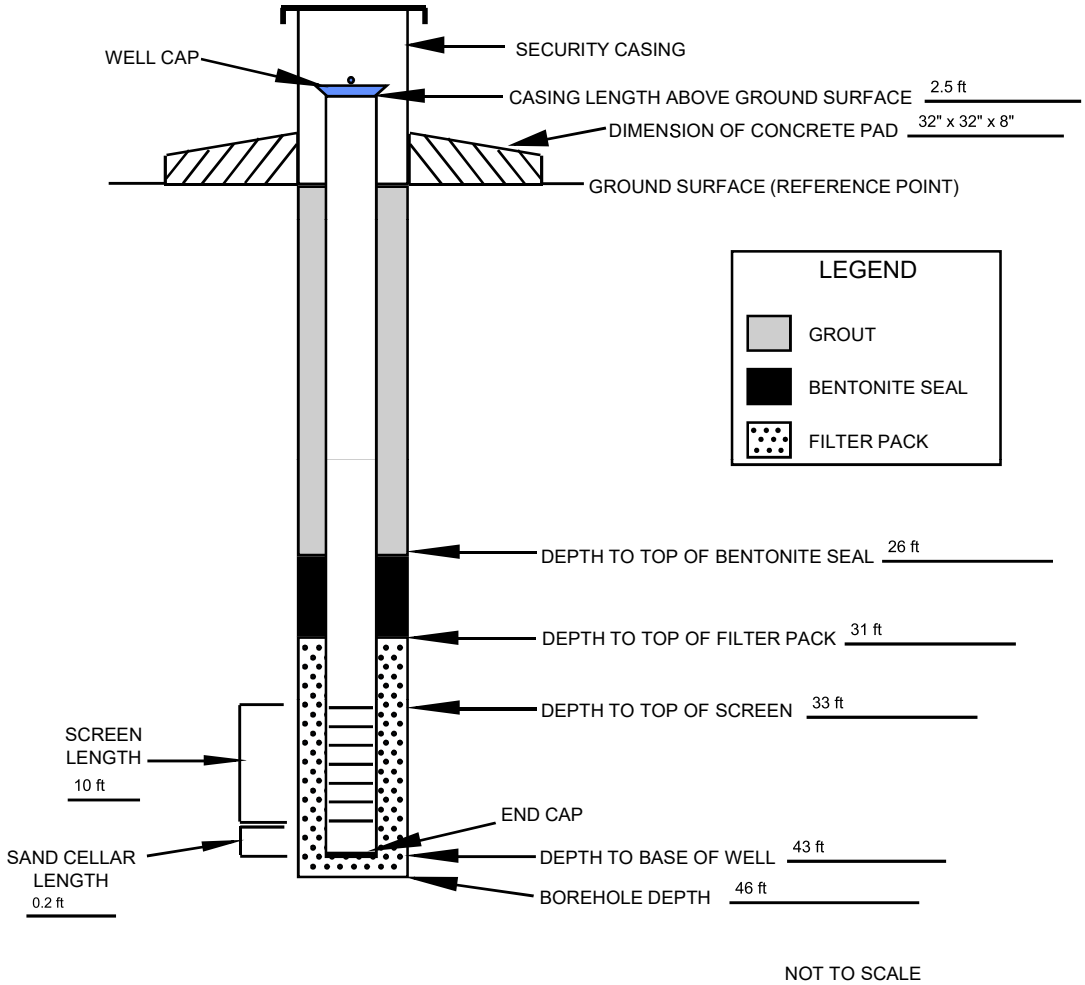
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-UGIA-MW10
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-UGIA-MW10

WELL CONSTRUCTION START DATE: 7/19/18
WELL CONSTRUCTION COMPLETE DATE:

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

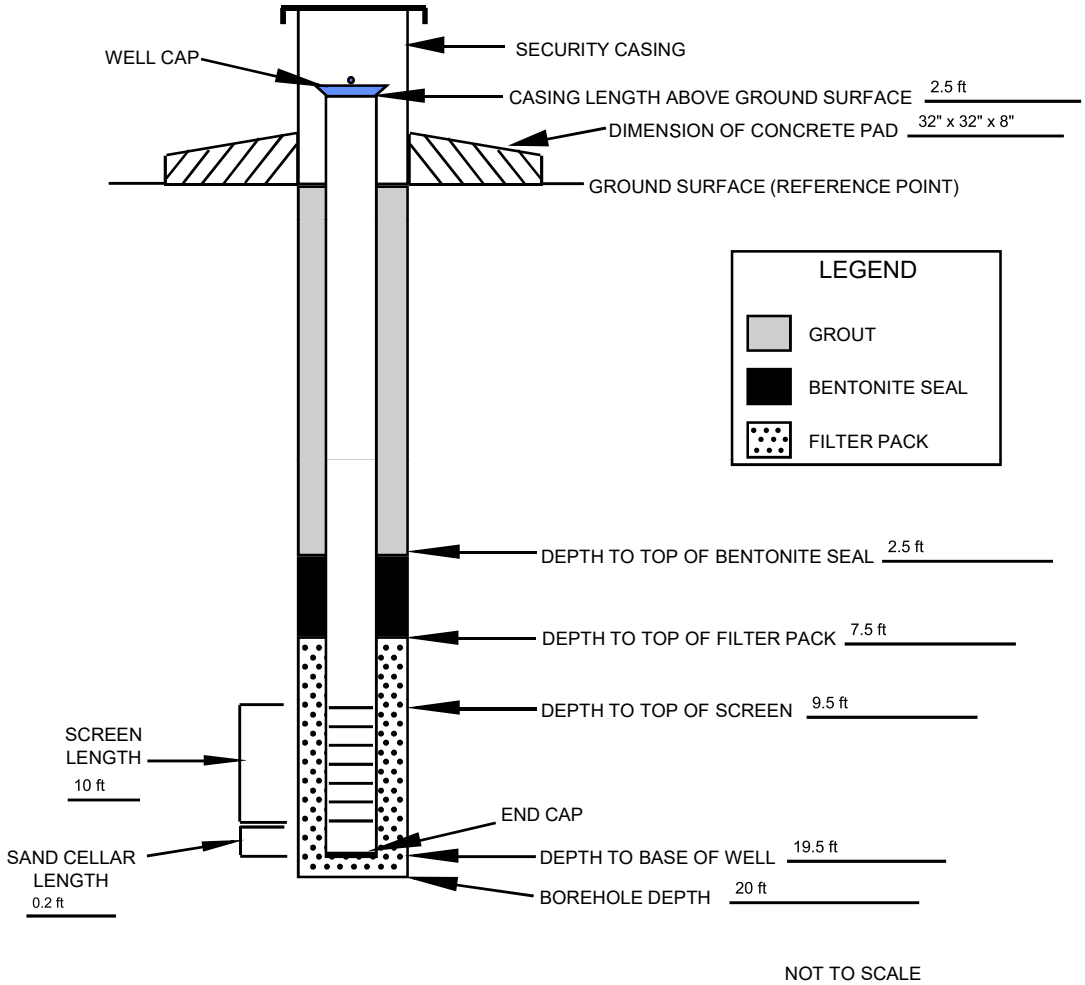
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-UGIA-MW11
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-UGIA-MW11

WELL CONSTRUCTION START DATE: 7/18/18
WELL CONSTRUCTION COMPLETE DATE:

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

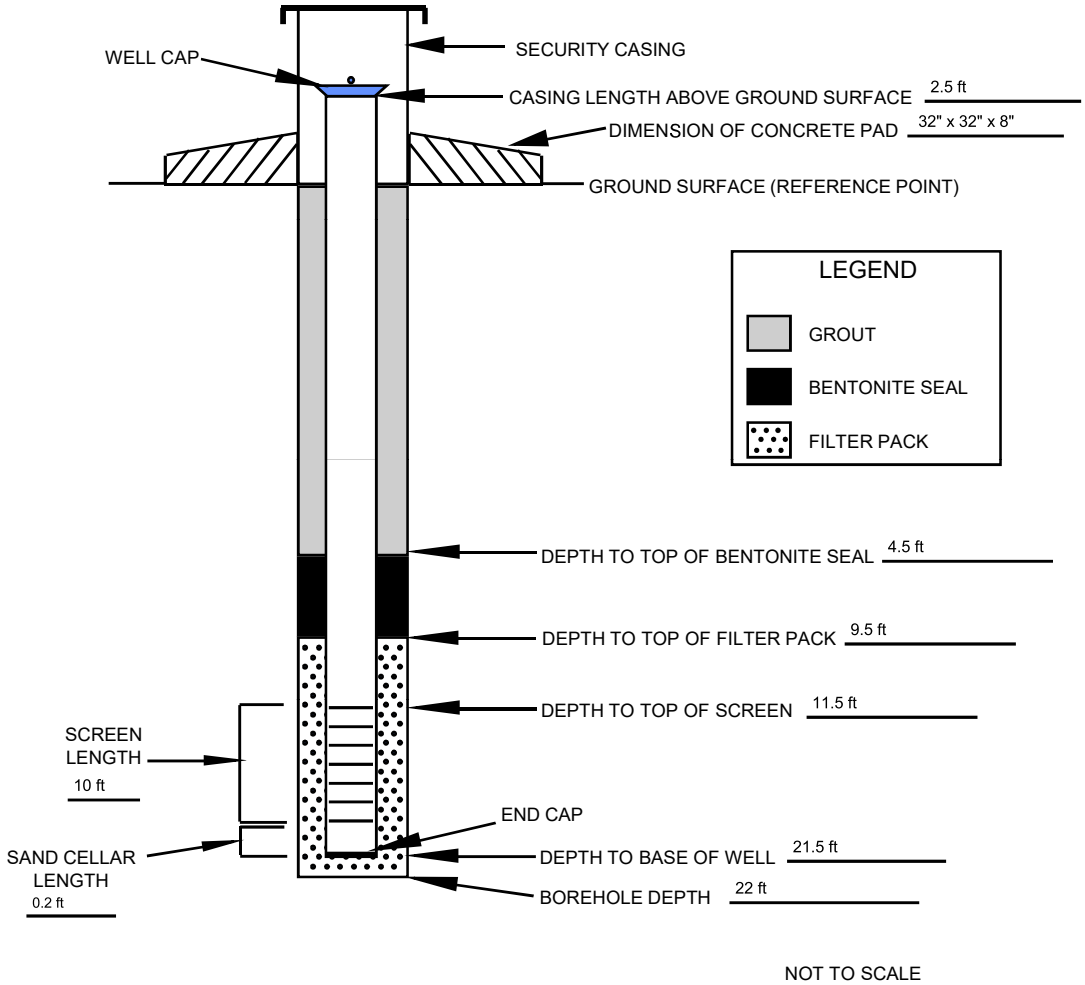
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 5 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW12
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW12

WELL CONSTRUCTION START DATE: 7/18/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

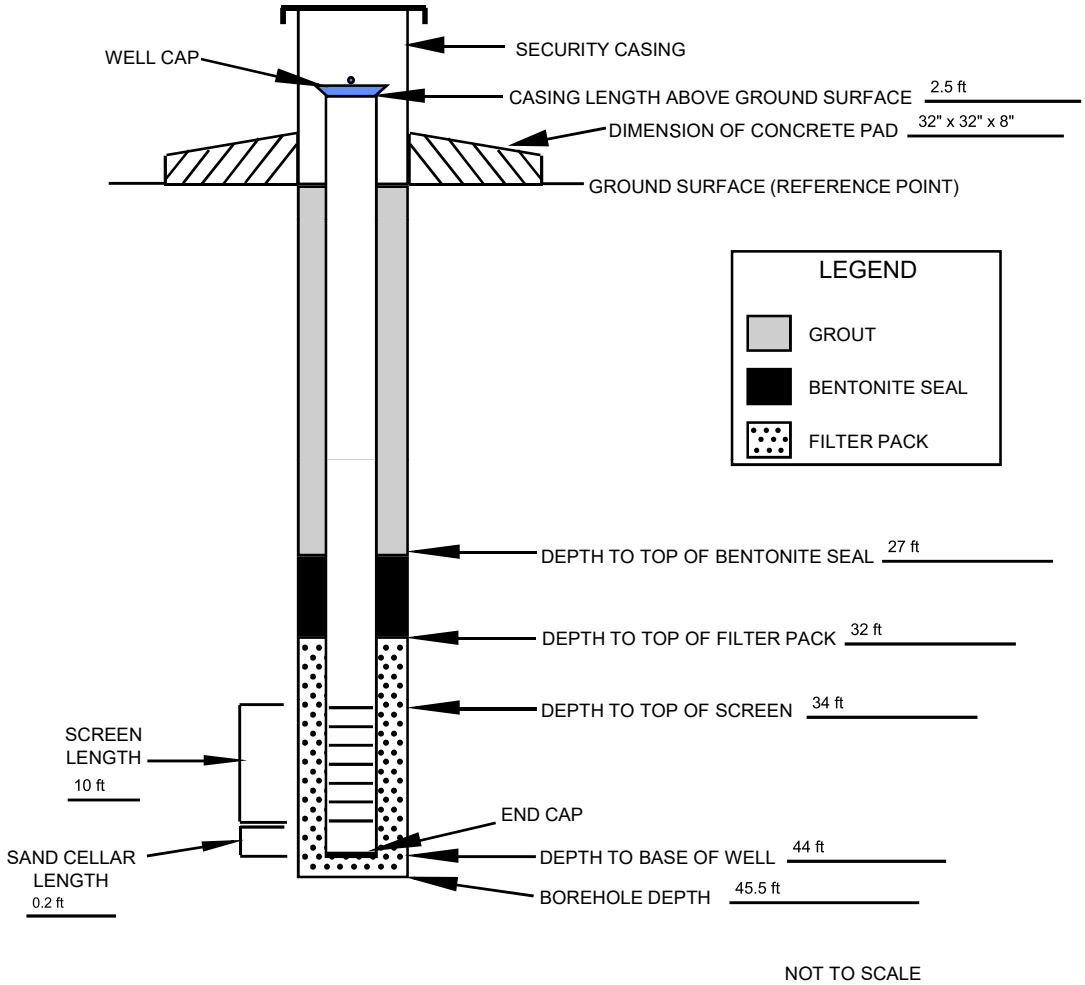
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: Stuart Cameron

DRILLING CONTRACTOR: GSI Engineering

DRILLING TECHNIQUE: Hollow Stem Auger
AUGER SIZE AND TYPE: 4.5" ID / 8" OD Hollow Stem

BOREHOLE IDENTIFICATION: 21B-DS-LGIA-MW13
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21B-DS-LGIA-MW13

WELL CONSTRUCTION START DATE: 7/21/18
WELL CONSTRUCTION COMPLETE DATE: _____

SCREEN MATERIAL: 0.010 Slotted PVC
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10

CASING MATERIAL: PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica Sand-Pack
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Bentonite Chips
AMOUNT BENTONITE USED: 150 lbs

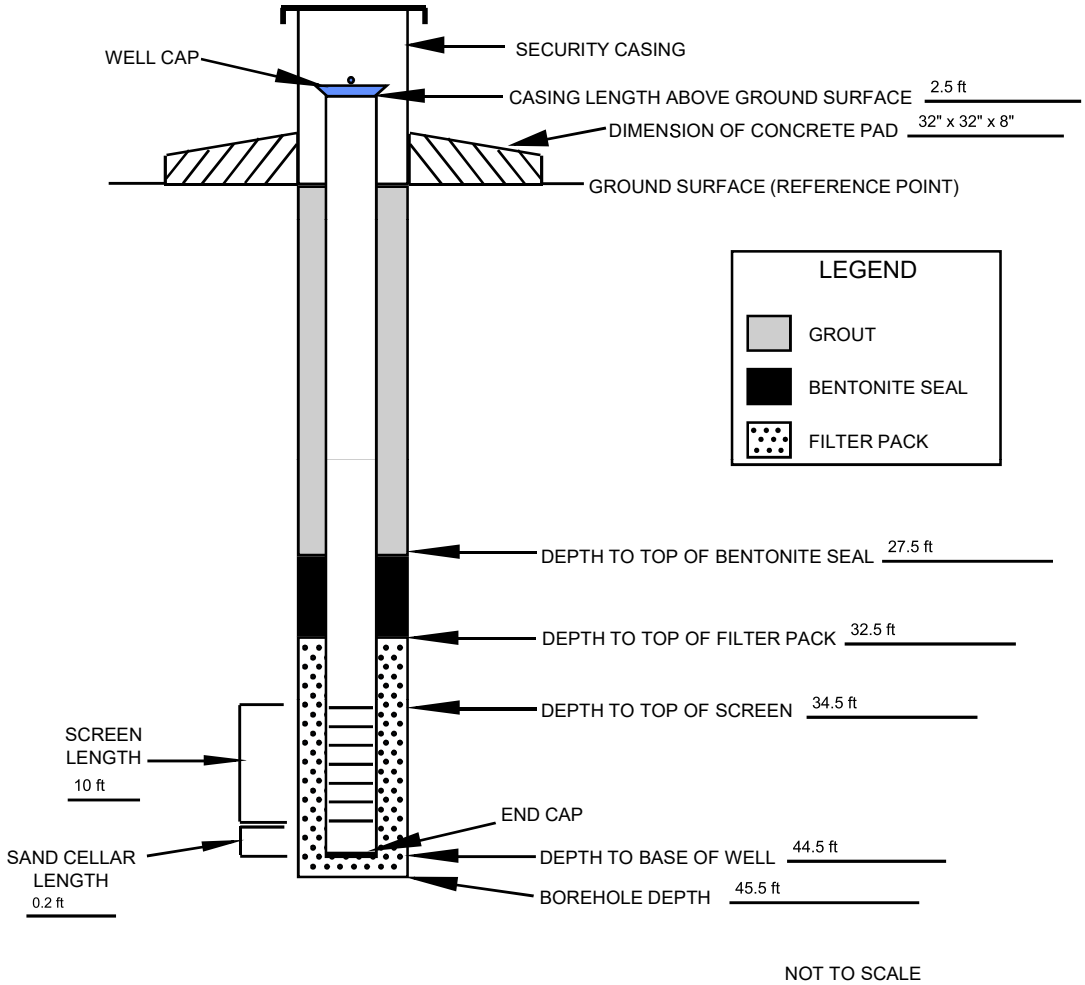
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: Portland (95%) and Bentonite (5%)

DIMENSIONS OF SECURITY CASING: 4" x 4" x 2.5 ft

TYPE OF WELL CAP: 2" compression plug
TYPE OF END CAP: 2" PVC End Cap

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: James Tinnell (GSI)

INSTALLATION OBSERVED BY: Stuart Cameron (ATI)

DISCREPANCIES: _____

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc. Exceeding Expectations

WELL/PIEZOMETER ID 21C-DGSA-MW01
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/7/18

LOCATION: 21C DATE INSTALLED: 4/5/18

TOTAL DEPTH (FTOC) 23.80 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe Alconox to rinse

EQUIPMENT NUMBERS:

pH Meter YSI556 MPS 08C101612/07787KX EC Meter — Thermometer YSI 556 MB Turbidity Meter HI 98703 08393434

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Mensured Well Depth Prior to Development (B) 23.80 ft.

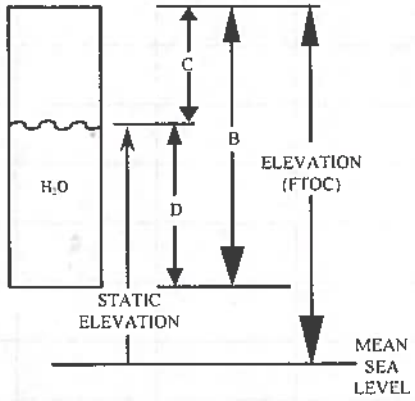
Measured Water Level Depth (C) 13.43 ft.

Length of Static Water Column (D) 23.80 (B) - 13.43 (C) = 10.37 ft. Pumping

Casing Water Volume 0.16 (A) x 10.37 (D) = 1.66 gal

Total Purge Volume = 198 (gal)

Measured Well Depth After Development (B) 23.80 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
Purge started @ 1400								
1435	13.43	2.5 lpm	—	7.24	2.161	11.12	353	
1505	13.76		—	7.00	2.109	11.18	164	
1515	13.68		—	6.94	2.096	11.51	204	
1540	13.64		—	6.92	2.094	11.48	34.8	Sump pump at 1550
1625	14.01	6.3 lpm	—	7.00	2.228	11.58	242	
1635	13.99		—	6.98	2.226	11.31	84.0	
1650	13.99		—	6.92	2.218	11.34	22.8	
1655	13.99		—	6.86	2.209	11.35	17.1	
BTG 1700	13.99		—	6.84	2.203	11.32	11.5	
1705	13.99		198	6.83	2.199	11.31	10.9	
					4/7/18			

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21C-LGIA-MW02
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/7/18

LOCATION: 21C DATE INSTALLED: 4/5/18

TOTAL DEPTH (FTOC) 13.36 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe Alconox + rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS 08C101612/07787SK EC Meter — Thermometer YSI 556 MB Turbidity Meter HI 98703 05393434

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 44.78 ft

Measured Water Level Depth (C) 13.46 ft

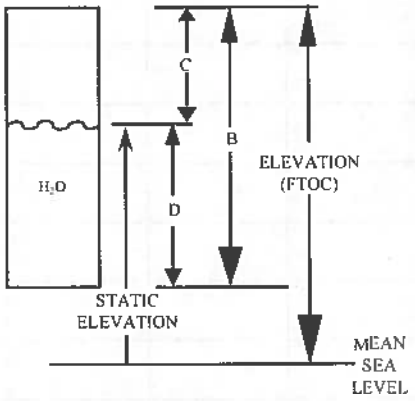
Length of Static Water Column (D) 44.78 (B) - 13.46 (C) = 31.32 ft

Pumping

Casing Water Volume 0.16 (A) x 31.32 (D) = 5.01 gal

Total Purge Volume = 166 (gal)

Measured Well Depth After Development (B) 13.36 ft



Purge started @ 1400

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1435	13.36	6.3		6.99	2.132	11.98	99.2	
1505	13.46			6.98	2.135	11.80	16.8	
1515	13.46			7.02	2.116	11.75	31.2	
1525	13.46			7.01	2.118	11.78	~~24.3~~ 25	24.1
1530	13.46			7.02	2.124	11.70	18.3	
1535	13.45			7.02	2.129	11.81	16.2	
1540	13.46		166	6.99	2.132	11.87	20.1	

4/7/18

1st
10:05

HGL HydroGeoLogic, Inc Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21C-UGIA-MW03
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/10/18

LOCATION: 21C DATE INSTALLED: 4/8/18

TOTAL DEPTH (FTOC) 22.95 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft+

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox & Water rinse

EQUIPMENT NUMBERS:

pH Meter YSI556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI98703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.95 ft.

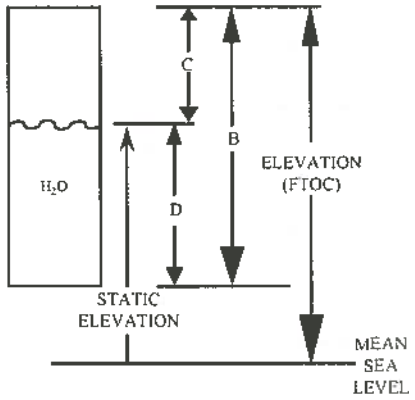
Measured Water Level Depth (C) 13.15 ft.

Length of Static Water Column (D) 22.95 (B) - 13.15 (C) = 9.8 ft. Pumping

Casing Water Volume .016 (A) x 9.8 (D) = 1.56 gal

Total Purge Volume = 18 (gal)

Measured Well Depth After Development (B) 22.97 ft.



Purge started @ 1125

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1215	13.38	0.5 lpm	—	6.57	2.015	12.51	732	
1220	13.38		—	6.64	1.984	11.99	692	
1245	13.39		—	6.71	2.074	12.01	117	
1250	13.42		—	6.93	2.073	12.01	39.2	
1255	13.41		—	6.90	2.247	12.14	14.3	
1300	13.41		—	6.78	2.069	12.03	12.8	
1305	13.42		—	6.83	2.094	12.08	5.62	
1310	13.42	—	18 gal	6.81	2.107	12.06	2.90	

4/10/18

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21C-LG3A-MW04
PAGE 1 of 1

PROJECT NAME: CHAP PROJECT NO.: AT3001 DATE: 4/9/18

LOCATION: 21C DATE INSTALLED: 4/6/18

TOTAL DEPTH (FTOC) 46.70 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox & water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI 98703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 46.70 ft.

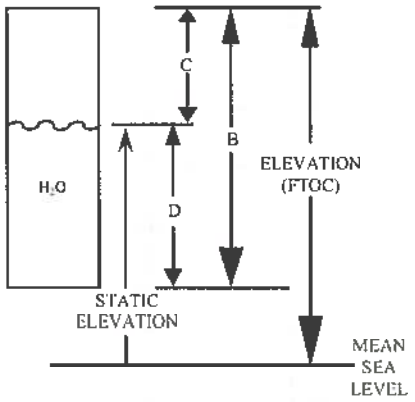
Measured Water Level Depth (C) 13.10 ft.

Length of Static Water Column (D) 46.70 (B) - 13.10 (C) = 33.60 ft. Pumping

Casing Water Volume 0.16 (A) x 33.60 (D) = 5.4 gal

Total Purge Volume = 202 (gal)

Measured Well Depth After Development (B) 46.72 ft.



Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
930	13.18	2.35 gpm	—	6.35	1.876	9.82	44.0	
935	13.18		—	6.65	1.975	10.40	9.10	
940	13.20		—	6.73	1.958	10.38	73.8	
945	13.18		—	6.78	1.918	10.49	250	
950	13.18		—	6.77	1.947	10.47	57.7	
955	13.18		—	6.82	1.958	10.42	7.75	
1000	13.20		—	6.82	1.939	10.38	25.9	
1005	13.19		—	6.82	1.959	10.47	18.7	
1010	13.19		—	6.81	1.913	10.39	12.9	
1015	13.20		—	6.81	1.899	10.41	1.87	
1020	13.20		202	6.82	1.939	10.39	2.17	

4/9/18

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID ZIC-UGTA-MW05
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/8/18

LOCATION: ZIC DATE INSTALLED: 4/5/18

TOTAL DEPTH (FTOC) 22.84 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox & water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 EC Meter YSI Thermometer YSI Turbidity Meter HI 98703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 22.84 ft.

Measured Water Level Depth (C) 12.78 ft.

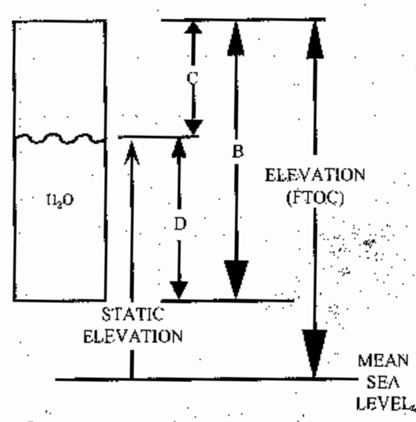
Length of Static Water Column (D) 22.84 (B) - 12.78 (C) = 10.06 ft.

Pumping

Casing Water Volume 0.16 (A) x 10.06 (D) = 1.61 gal

Total Purge Volume = 85.2 (gal)

Measured Well Depth After Development (B) 22.80 ft.



Begin purge @ 830

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
920	12.78	2.8 lpm	—	6.63	1.961	9.64	64.4	
935	12.95		—	6.71	2.018	9.23	235	
940	12.96		—	6.80	2.017	9.61	34.1	
950	12.95		—	6.82	2.096	9.58	68.3	
1000	12.93		—	6.82	2.097	9.48	26.4	
1010	12.94		—	6.82	2.111	9.85	10.9	
K8T 1015	12.95		—	6.82	2.124	9.77	8.07	
1020	12.95		—	6.82	2.135	9.87	5.62	
1025	12.95		85.2	6.81	2.142	9.83	4.87	

[illegible] 4/8/18

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc. — Exceeding Expectations

WELL/PIEZOMETER ID 21C-UGIA-MW06
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/8/18

LOCATION: 21C DATE INSTALLED: 9/5/18

TOTAL DEPTH (FTOC) 47.20 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe Alconox + water rinse

EQUIPMENT NUMBERS:

pH Meter YSI EC Meter YSI Thermometer YSI Turbidity Meter HACH 8703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 47.20 ft.

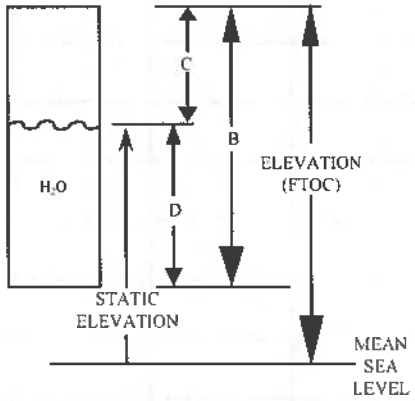
Measured Water Level Depth (C) 12.71 ft.

Length of Static Water Column (D) 47.20 (B) - 12.71 (C) = 34.49 ft. Pumping

Casing Water Volume .016 (A) x 34.49 (D) = 5.52 gal

Total Purge Volume = 131.2 (gal)

Measured Well Depth After Development (B) 47.25 ft.



Begin Purge @ 830

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
920	12.71	0.2 lpm	—	6.35	1.898	10.23	14.1	
935	12.80	↓	—	6.72	1.956	10.24	19.4	
940	12.80		—	6.77	1.967	10.23	5.90	
950	12.80		131.2	6.79	1.978	10.39	8.89	

4/8/18

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21C-UGIA-MW07
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/7/18

LOCATION: 21C DATE INSTALLED: 4/4/18

TOTAL DEPTH (FTOC) 24.16 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox + water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS 08C101612 / 17787X EC Meter — Thermometer YSI 556 MPS Turbidity Meter HI98703 08393434

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 24.16 ft.

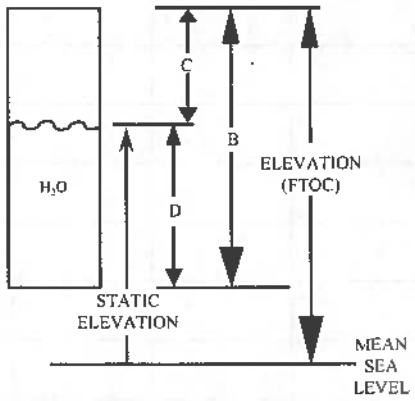
Measured Water Level Depth (C) 12.98 ft.

Length of Static Water Column (D) 24.16 (B) − 12.98 (C) = 11.18 ft. Pumping

Casing Water Volume 0.16 (A) x 11.18 (D) = 1.789 gal

Total Purge Volume = 89 (gal)

Measured Well Depth After Development (B) 24.16 ft.



Purge started @ 930

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
935	13.13	2.51 lpm	—	6.66	2.164	9.47	213	
1005	13.13		—	6.72	2.094	9.51	141	
1045	13.13		—	6.81	2.149	10.20	99.2	
1120	13.13		—	6.71	2.117	~~10.45~~	118	10.49
1130	13.13		—	6.80	2.212	10.54	20.1	
1135	13.13		—	6.79	2.209	10.48	16.3	
1140	17.13		—	6.81	2.201	10.51	18.7	
1145	13.13	↓	89 gal	6.80	2.191	10.54	22.5	
					4/7/18			

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc. — Exceeding Expectations

WELL/PIEZOMETER ID: 21C-LGIA-MW05

PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/7/18

LOCATION: 21C DATE INSTALLED: 4/4/18

TOTAL DEPTH (FTOC) 47.70 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe Alonox & water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS 08C101612 / 17879X EC Meter YSI 556 MPS Thermometer YSI 556 MPS Turbidity Meter HI 98703 08343434

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 47.70 ft.

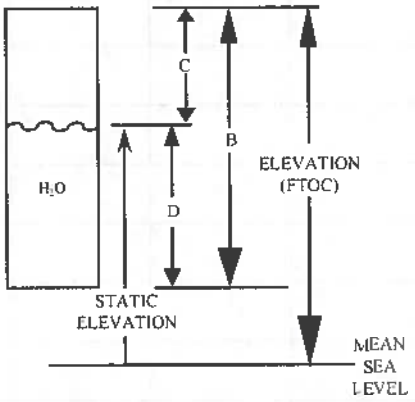
Measured Water Level Depth (C) 12.92 ft.

Length of Static Water Column (D) 47.70 (B) - 12.92 (C) = 34.78 ft. Pumping

Casing Water Volume 0.16 (A) x 34.78 (D) = 5.56 gal

Total Purge Volume = 225 (gal)

Measured Well Depth After Development (B) 47.70 ft.



Purge started @ 930

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
935	13.07	6.31 lpm	—	6.47	2.030	9.23	71000	
1005	13.07		—	6.78	2.083	10.44	19.3	
1045	13.07		—	6.80	2.011	10.48	131	
1120	13.07		—	6.79	2.115	10.90	43.6	
1130	13.07		—	6.81	2.082	11.01	13.6	
1135	13.07		—	6.79	2.094	10.89	18.2	
1140	13.07		—	6.80	2.110	10.91	12.4	
1145	13.07		225 gal	6.80	2.120	10.95	4.65	
						4/7/18		

2nd
1415

HGL HydroGeoLogic, Inc. Exceeding Expectations

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 21C-UGIA-MW09
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/10/18

LOCATION: 21C DATE INSTALLED: 4/6/18

TOTAL DEPTH (FTOC) 23.80 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5 ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☒ Pumping ☒ Surge ☐ Describe

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Alconox & water rinse

EQUIPMENT NUMBERS:

pH Meter YSI556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI 98703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 23.80 ft.

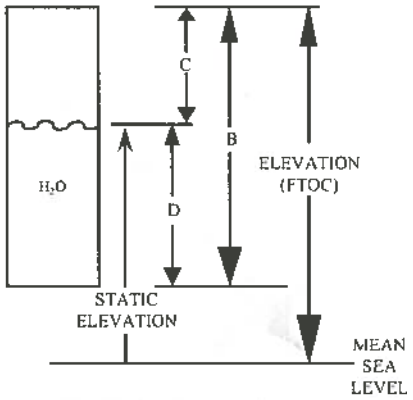
Measured Water Level Depth (C) 13.00 ft.

Length of Static Water Column (D) 23.80 (B) - 13.00 (C) = 10.80 ft. Pumping

Casing Water Volume .016 (A) x 10.80 (D) = 1.73 gal

Total Purge Volume = 163 (gal)

Measured Well Depth After Development (B) 23.81 ft.



Purge Started @ 1415

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1455	13.18	6.5 lpm	—	7.17	2.406	13.91	43.3	
1520 ~~1500~~	13.20		—	7.11	2.592	13.95	31.5	
1525	13.18		—	7.08	2.566	13.38	9.32	
1530	13.19		—	6.74	2.369	13.02	5.38	
1535	13.19		—	~~7.53~~ 6.95	2.456	13.11	3.19	
1540	13.18		163 gal	7.01	2.356	13.02	2.43	

4/10/18

WELL DEVELOPMENT RECORD

HydroGeoLogic, Inc
Exceeding Expectations

WELL/PIEZOMETER ID 21C-LGIA-MW1D
PAGE 1 of 1

PROJECT NAME: CHAAP RI/FS PROJECT NO.: AT3001 DATE: 4/8/18

LOCATION: 21C DATE INSTALLED: 4/6/18

TOTAL DEPTH (FTOC) 47.80 CASING DIAMETER 2"

MEASURING POINT HEIGHT ABOVE/BELOW GROUND LEVEL 2.5ft

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☑ Pumping ☑ Surge ☐ Describe

Equipment decontaminated prior to development ☑ Yes ☐ No

Describe Alconox & water rinse

EQUIPMENT NUMBERS:

pH Meter YSI 556 MPS EC Meter YSI Thermometer YSI Turbidity Meter HI 98703

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth Prior to Development (B) 47.80 ft.

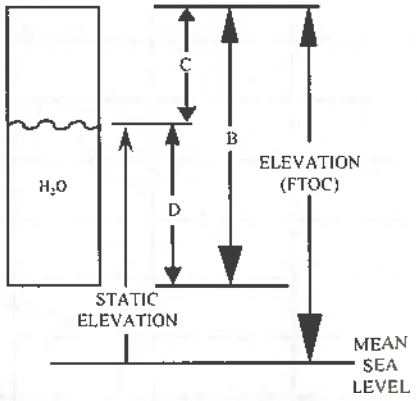
Measured Water Level Depth (C) 12.78 ft.

Length of Static Water Column (D) 47.80 (B) - 12.70 (C) = 35.10 ft. Pumping

Casing Water Volume 0.16 (A) x 35.10 (D) = 5.62 gal

Total Purge Volume = 135 (gal)

Measured Well Depth After Development (B) 47.82 ft.



Purge Started @ 1610

Time	DTW (feet btoc)	Flow Rate (gpm or lpm)	Gallons Removed	pH	Cond. (mS/cm)	Temp. (deg C)	Turbidity (NTU)	Notes
1635	12.75	6.2 lpm	—	7.21	2.133	~~7.80~~ 8.45	7100	
1640	12.78	"	—	6.91	2.088	12.54	88.9	
1650	12.79	"	—	6.88	2.065	12.62	75.0	
1700	12.81	"	—	6.92	2.075	12.67	119	
1710	12.80	"	—	6.96	2.124	12.51	30.0	
1715	12.81	"	—	6.90	2.078	12.20	77.7	
1720	12.80	"	—	6.89	2.061	12.19	12.2	
1724	12.80	"	—	6.88	2.037	12.18	6.53	
1728	12.81	"	—	6.88	2.037	12.19	5.65	
1732	12.81	"	135	6.89	2.032	12.19	2.13	

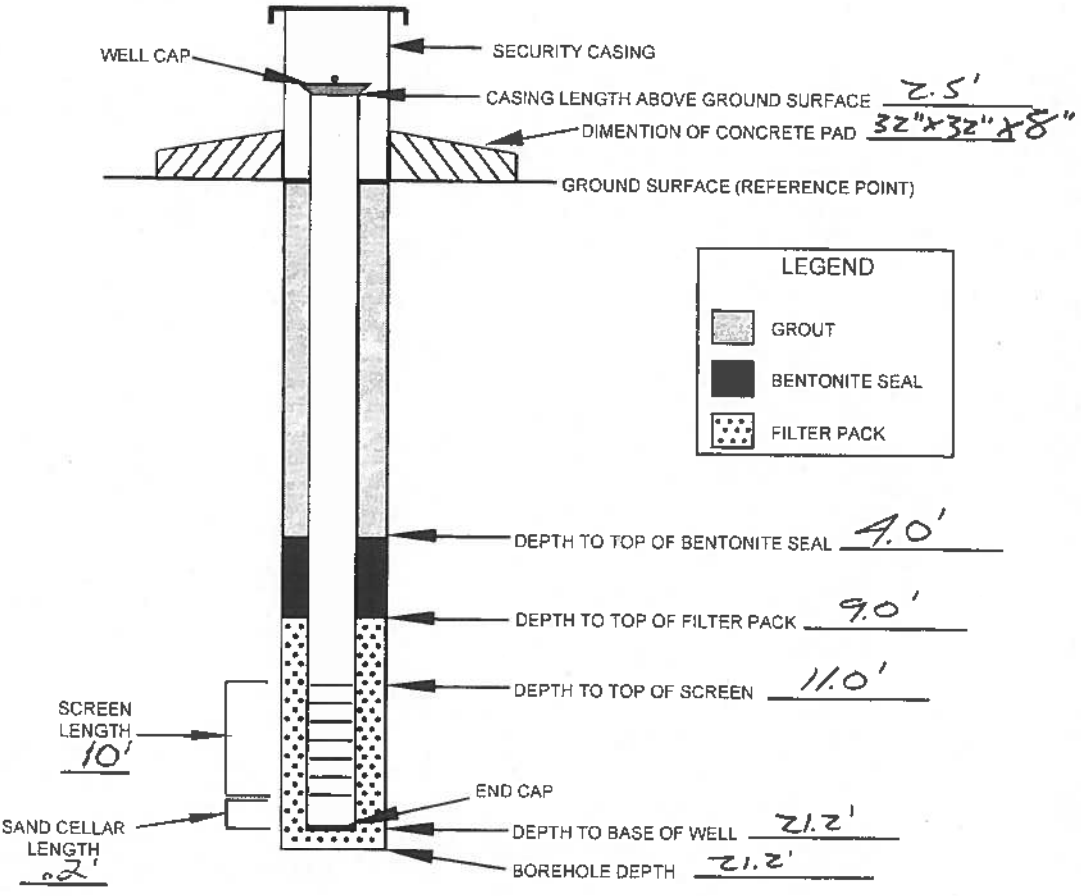
4/8/17

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID w/ 2'SP
BOREHOLE IDENTIFICATION: ZIC-UGSA-MW01
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: ZIC-UGSA-MW01
WELL CONSTRUCTION START DATE: 4.5.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: Sched 40 PVC - .01 Slot
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 11'-21'
CASING MATERIAL: Sched 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: Medium Chips
AMOUNT BENTONITE USED: 100 lbs
TYPE OF CEMENT: Type I portland
AMOUNT CEMENT USED: 75 lbs
GROUT MATERIALS USED: 5% Bentonite
DIMENSIONS OF SECURITY CASING: 4" x 4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH & J. Finnell
INSTALLATION OBSERVED BY: A. Hedgepath

DISCREPANCIES:

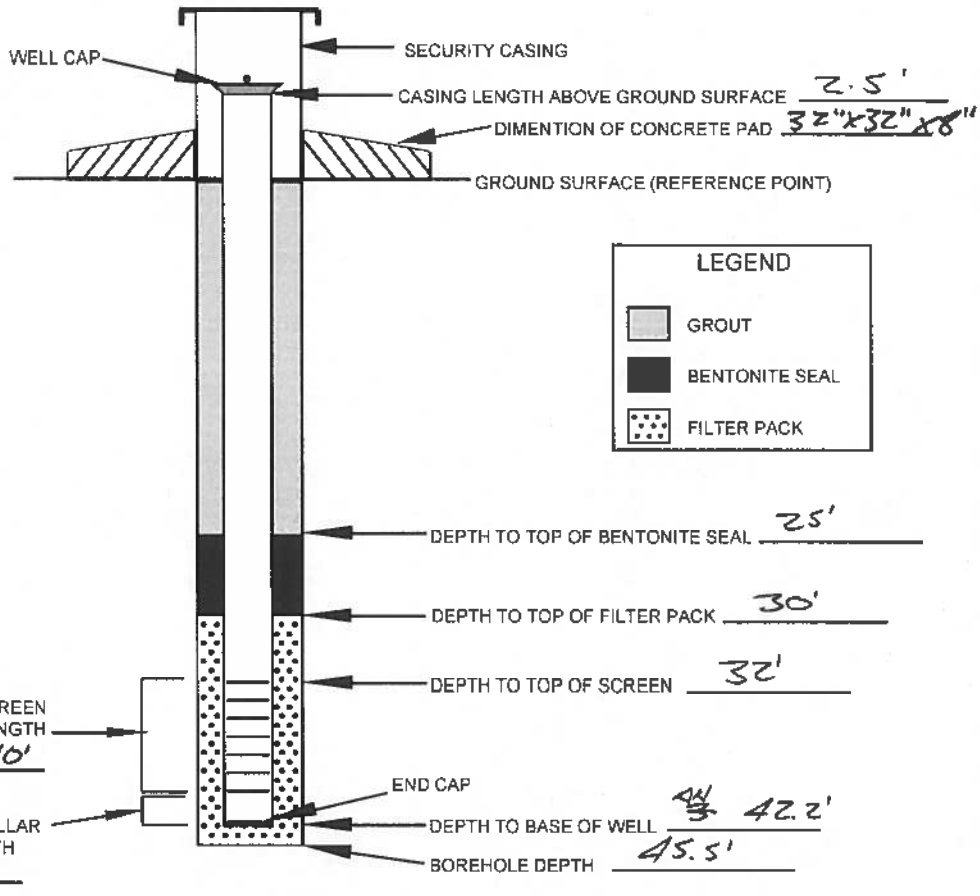
WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepeth
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: 4.25" HSA
AUGER SIZE AND TYPE: 4.25"
BOREHOLE IDENTIFICATION: ZIC-LGIA-MW02
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: ZIC-LGIA-MW02
WELL CONSTRUCTION START DATE: 4.4.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: 40 sched. PVC .01 slotted
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 32'-42'
CASING MATERIAL: 40 sched PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: medium chips 1/4 pellets, Timerotex
AMOUNT BENTONITE USED: 75 lbs
TYPE OF CEMENT: Portland Type I
AMOUNT CEMENT USED: 75 lbs
GROUT MATERIALS USED: 5% Bentonite
DIMENSIONS OF SECURITY CASING: 4"x4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: J. Finnell
INSTALLATION OBSERVED BY: A. Hedgepeth

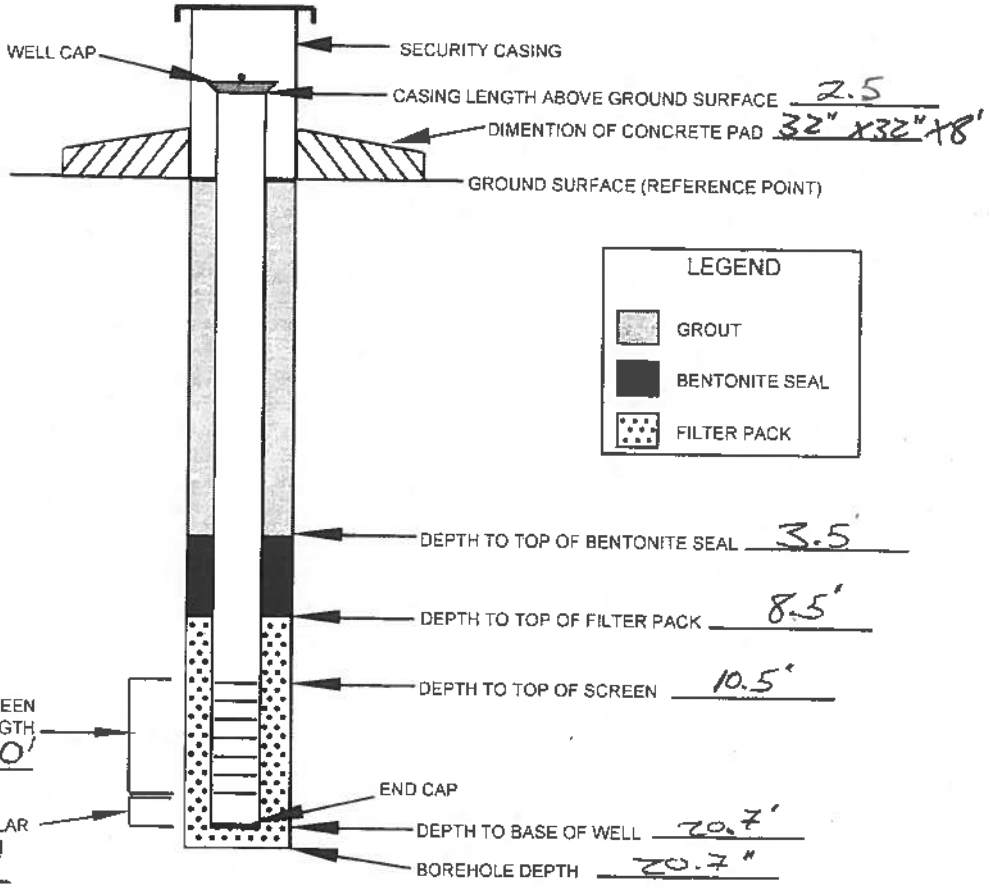
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID w 2'SP
BOREHOLE IDENTIFICATION: 21C-UGSA-MW03
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: 21C-UGSA-MW03
WELL CONSTRUCTION START DATE: 4.8.16
WELL CONSTRUCTION COMPLETE DATE: 4.9.16
SCREEN MATERIAL: Sched. 40 PVC .01" Slot
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10'
CASING MATERIAL: Sched 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: Medium Chips
AMOUNT BENTONITE USED: 100 lbs
TYPE OF CEMENT: Type I Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: 5% Bentonite
DIMENSIONS OF SECURITY CASING: 4" x 4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH M. Welch J. Tinarth AH
INSTALLATION OBSERVED BY: A. Hedgepath

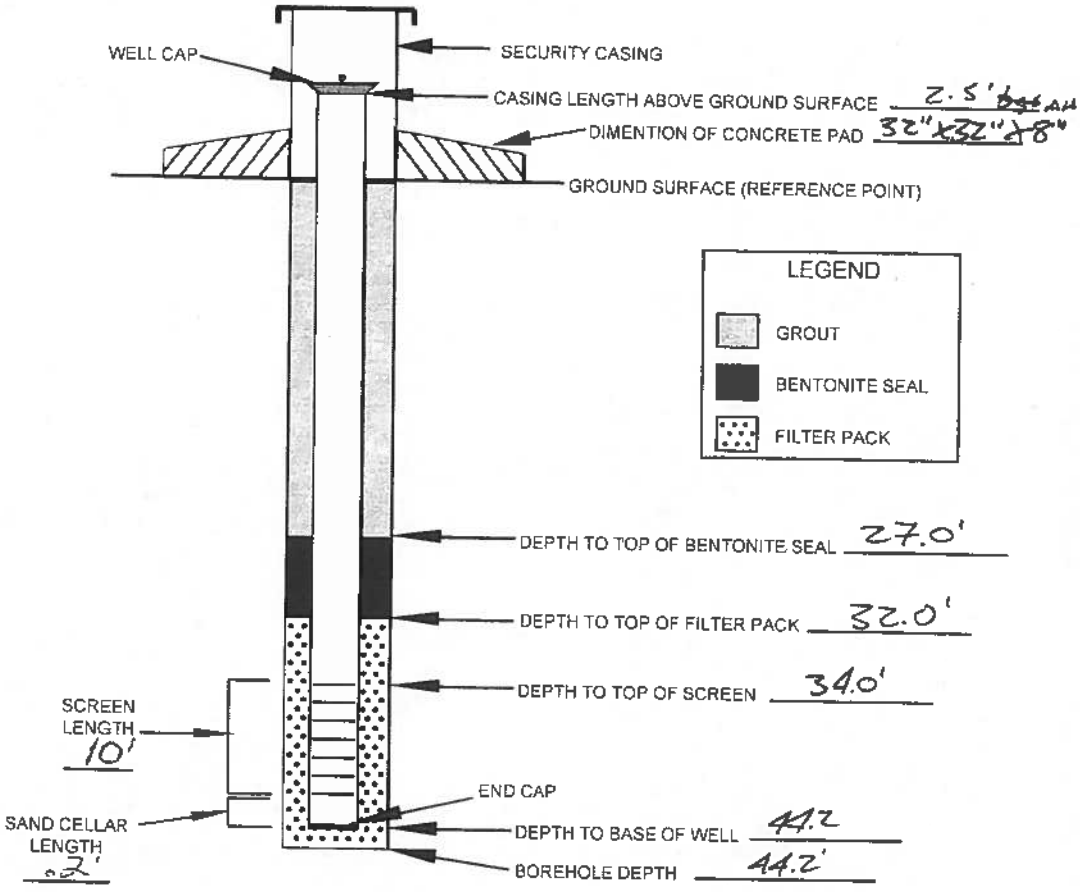
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID w 2'SD
BOREHOLE IDENTIFICATION: ZIC-LG1A-mw04
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: ZIC-LG1A-mw04
WELL CONSTRUCTION START DATE: 4.6.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: Sched. 40 PVC .01" slot
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 34-44'
CASING MATERIAL: Sched. 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: ~~Medium Chips~~ T.R30 Time Pellets
AMOUNT BENTONITE USED: 50 lbs
TYPE OF CEMENT: Type I Portland
AMOUNT CEMENT USED: 75 lbs
GROUT MATERIALS USED: 5% Bentonite
DIMENSIONS OF SECURITY CASING: 4" x 4"
TYPE OF WELL CAP: J-Plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH J. Tinnell
INSTALLATION OBSERVED BY: A. Hedgepath

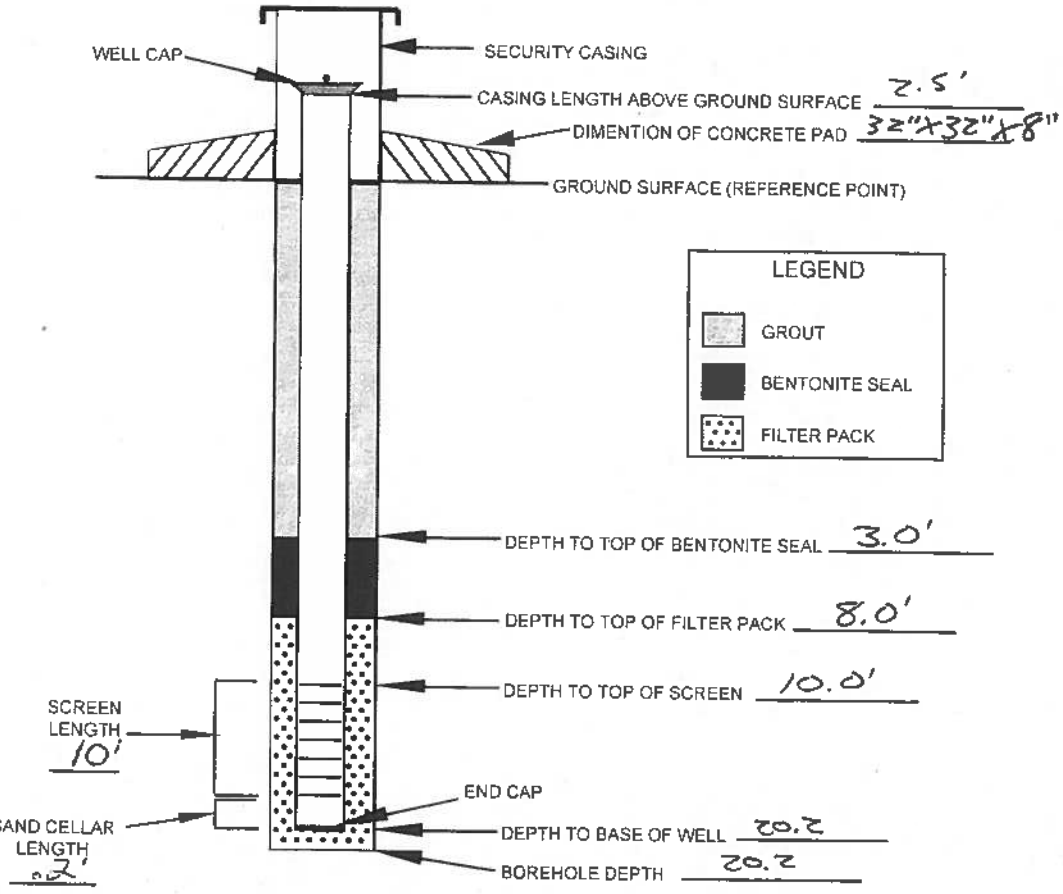
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID x 2'SD
BOREHOLE IDENTIFICATION: ZIC-UGSA-MW05
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: ZIC-UGSA-MW05
WELL CONSTRUCTION START DATE: 4.5.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: Sch 40 PVC - .01 Slot
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 20-10'
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: Medium Chips
AMOUNT BENTONITE USED: 100 lbs
TYPE OF CEMENT: Type I portland
AMOUNT CEMENT USED: 25 lbs
GROUT MATERIALS USED: 5% Bentonite
DIMENSIONS OF SECURITY CASING: 4"x4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH J. Tinnell
INSTALLATION OBSERVED BY: A. Hedgepath

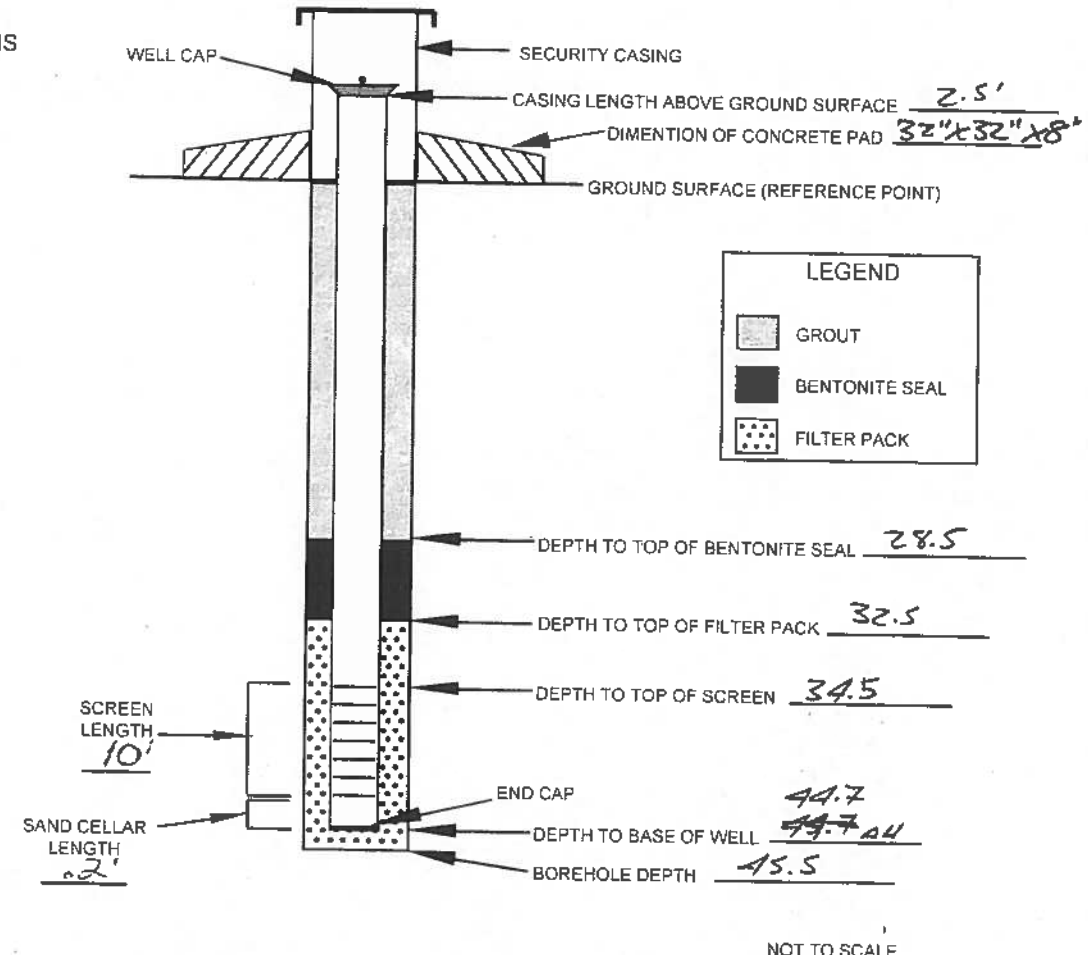
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID w 2' SP
BOREHOLE IDENTIFICATION: ZIC-LGSA-mw06
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: ZIC-LGSA-mw06
WELL CONSTRUCTION START DATE: 4.5.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: 40 sched. PVC .015 slot
SCREEN DIAMETER: 2'
STRATUM-SCREENED INTERVAL (FT): 44.5-34.5'
CASING MATERIAL: Sched 40 PVC
CASING DIAMETER: 2'

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: ~250 lbs
TYPE OF BENTONITE: Medium Chips 1/4 pellets T.30
AMOUNT BENTONITE USED: 50 lbs
TYPE OF CEMENT: Type I portland
AMOUNT CEMENT USED: 75 lbs
GROUT MATERIALS USED: 5% Bentonite
DIMENSIONS OF SECURITY CASING: 4" x 4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH & J. Finnell
INSTALLATION OBSERVED BY: A. Hedgepath

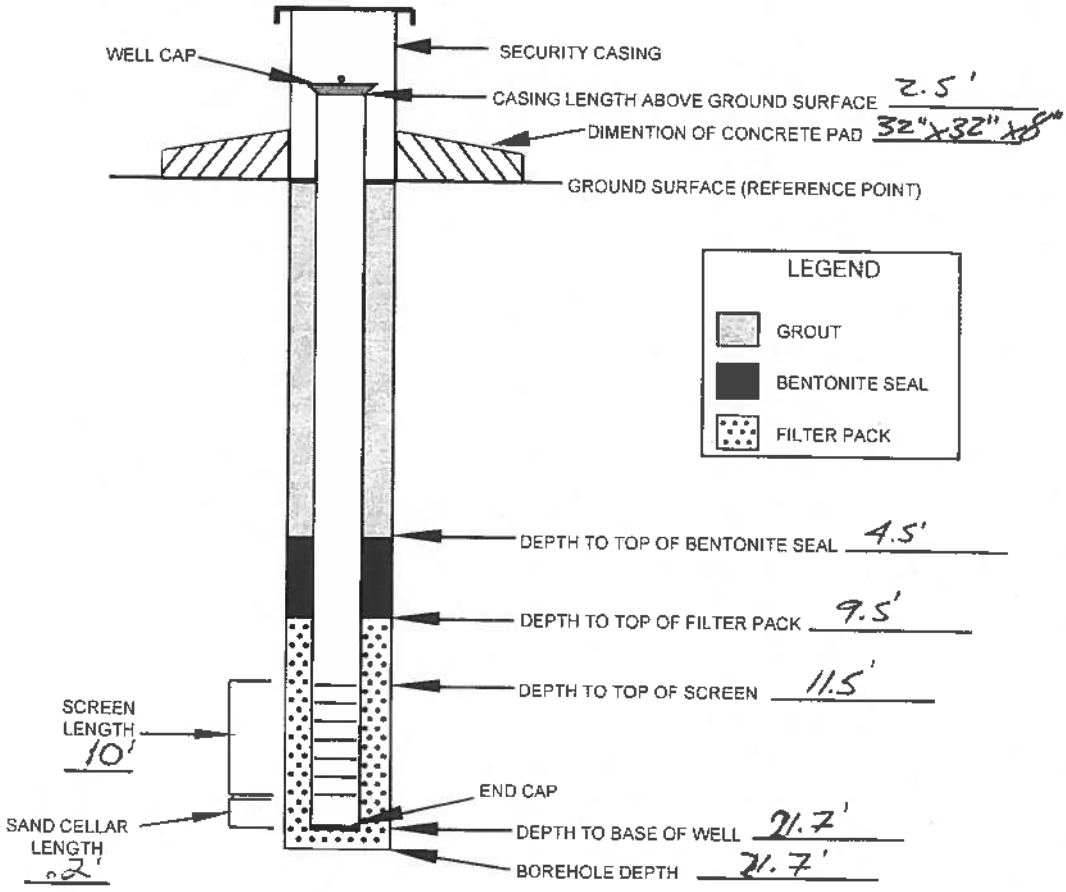
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID w/ 2'SP
BOREHOLE IDENTIFICATION: 21C-U6IA-mw07
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: 21C-U6IA-mw07
WELL CONSTRUCTION START DATE: 4.4.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: Sch. 40 PVC .01 Slotted
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 11.5-21.5
CASING MATERIAL: Sch. 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: Medium All 1/4 time-release Pellets
AMOUNT BENTONITE USED: 75 lbs
TYPE OF CEMENT: Type I portland
AMOUNT CEMENT USED: 1.5 bags 75 lbs
GROUT MATERIALS USED: 5% bentonite
DIMENSIONS OF SECURITY CASING: 4" x 4"
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH J. Tinnell
INSTALLATION OBSERVED BY: A. Hedgepath

DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepath
DRILLING CONTRACTOR: GSI Engineering
DRILLING TECHNIQUE: HSA w/ SP
AUGER SIZE AND TYPE: 4.25" ID w 2' SP

BOREHOLE IDENTIFICATION: ZIC-LGIA-mw08
BOREHOLE DIAMETER: 8" OD
WELL IDENTIFICATION: ZIC-LGIA-mw08

WELL CONSTRUCTION START DATE: 4.4.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18

SCREEN MATERIAL: Sched 40 PVC-.01 slotted
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 35'-45'

CASING MATERIAL: Sched 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs

TYPE OF BENTONITE: Medium ~~Chips~~ 1/4 Time release Pellets
AMOUNT BENTONITE USED: 75 lbs

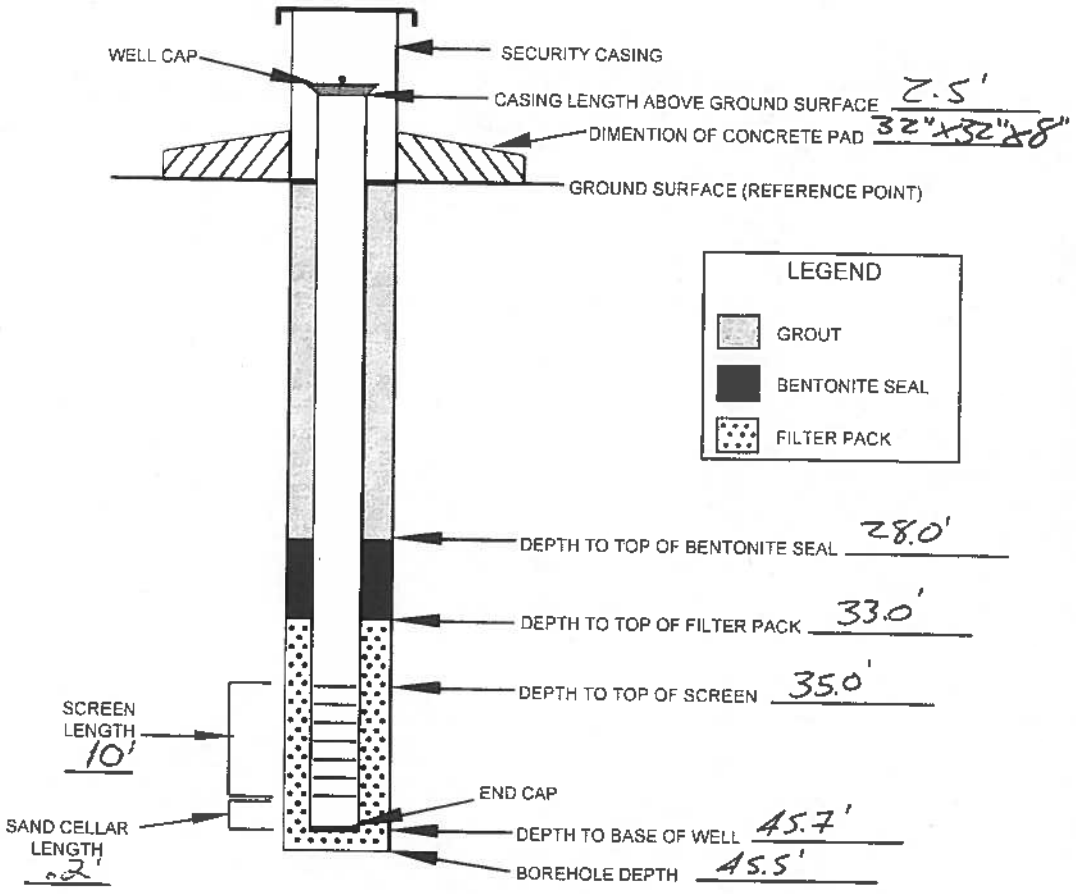
TYPE OF CEMENT: Type I portland
AMOUNT CEMENT USED: 25 lbs
GROUT MATERIALS USED: 5% bentonite

DIMENSIONS OF SECURITY CASING: 4" x 4"

TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC

COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: AH J. Tinnell
INSTALLATION OBSERVED BY: A. Hedgepath

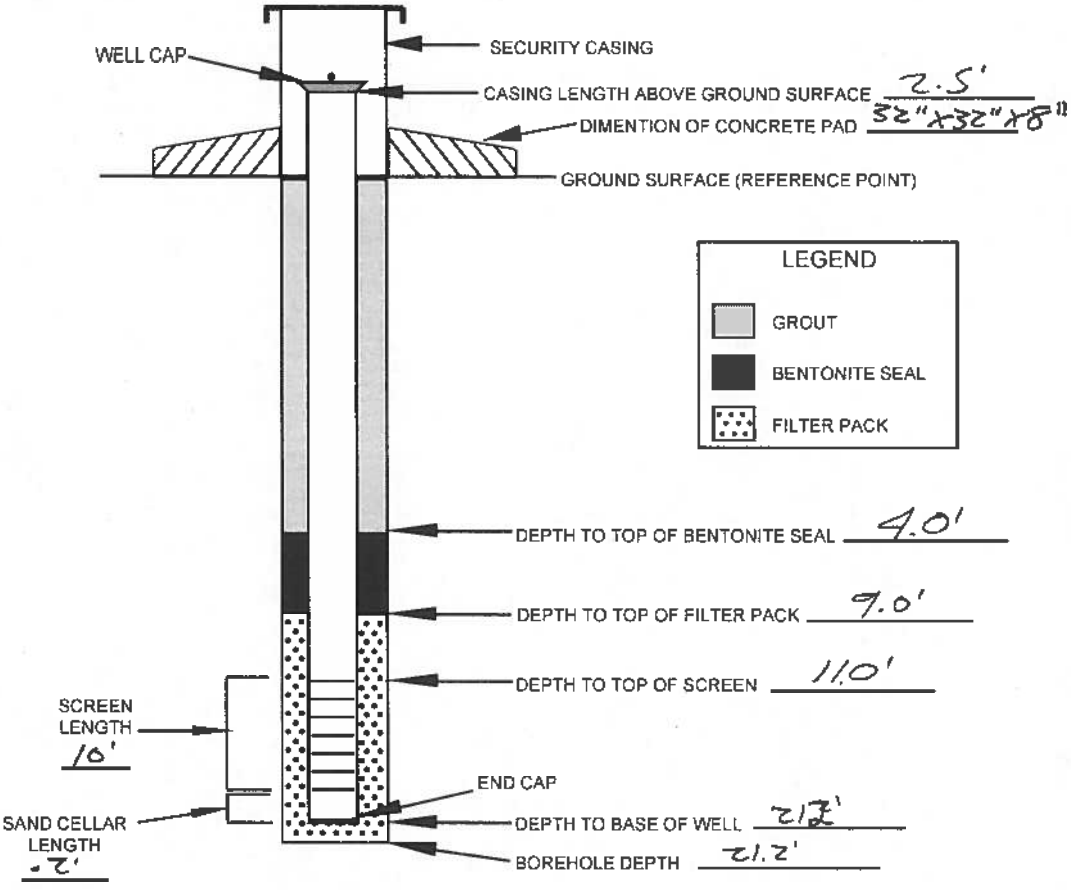
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepeth
DRILLING CONTRACTOR: GSS Engineering
DRILLING TECHNIQUE: HSA
AUGER SIZE AND TYPE: 4.25" ID
BOREHOLE IDENTIFICATION: 21C-UG3A-MW09
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 21C-UG3A-MW09
WELL CONSTRUCTION START DATE: 4.6.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: Sch 40 PVC-.01 Slotted
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10'
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #6/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: Medium Chips
AMOUNT BENTONITE USED: 100 lbs
TYPE OF CEMENT: Type I Portland
AMOUNT CEMENT USED: 50 lbs
GROUT MATERIALS USED: 5% Bent.
DIMENSIONS OF SECURITY CASING: 4"x4"x5'
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: M. Wold
INSTALLATION OBSERVED BY: A. Hedgepeth

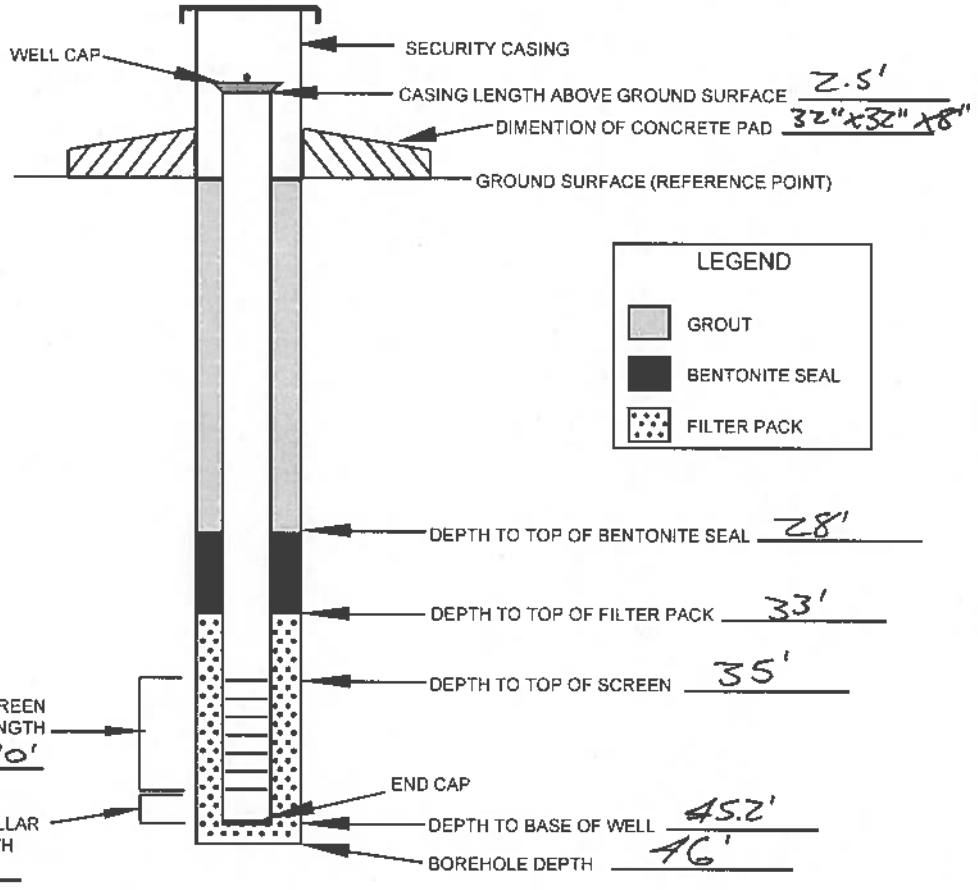
DISCREPANCIES:

WELL CONSTRUCTION FORM
(STANDARD WELL)

FIELD REPRESENTATIVE: A. Hedgepeth
DRILLING CONTRACTOR: GSS Engineering
DRILLING TECHNIQUE: 4.25" HSA
AUGER SIZE AND TYPE: 4.25" ID
BOREHOLE IDENTIFICATION: ZIC-LGSA-mw10
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: ZIC-LGSA-mw10
WELL CONSTRUCTION START DATE: 4.6.18
WELL CONSTRUCTION COMPLETE DATE: 4.9.18
SCREEN MATERIAL: Sched 40 PVC - .010 slot
SCREEN DIAMETER: 2"
STRATUM-SCREENED INTERVAL (FT): 10'
CASING MATERIAL: Sched 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Silica
GRADIATION: #16/30
AMOUNT OF FILTER PACK USED: 250 lbs
TYPE OF BENTONITE: TR30 Bent. pellets
AMOUNT BENTONITE USED: 50 lbs
TYPE OF CEMENT: Type I portland
AMOUNT CEMENT USED: 75 lbs
GROUT MATERIALS USED: 5% Portland Bentonite AA
DIMENSIONS OF SECURITY CASING: 4"x4"x5'
TYPE OF WELL CAP: J-plug
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: J. Finnell
INSTALLATION OBSERVED BY: A. Hedgepeth

DISCREPANCIES:

APPENDIX F

SURVEY DATA

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Monitoring Well Survey Locations

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Survey of Monitoring Well Locations Cornhusker Army Ammunition Plant
Horizontal Datum - NAD 1983 Nebraska State Plane (Zone 2600) (Grid)
Vertical Datum - NAVD88
Surveyor - Adam Goertzen, Nebraska LS #704
Date - 9/19/2018

Point	Northing(Y)	Easting(X)	Ground Elevation	Elevation at Top North Edge of PVC Casing	Code
2190	408739.4	2049885.5	1901.79	1904.36	20B-LGIA-MW04
2191	408739.8	2049890.3	1901.75	1904.27	20B-UGIA-MW03
2194	408737.0	2049683.8	1901.98	1904.51	20B-UGIA-MW07
2196	408737.0	2049678.8	1901.94	1904.48	20B-LGIA-MW08
2198	405513.4	2048412.0	1907.21	1909.81	21B-BPA-UGIA-MW01
2200	405507.9	2048412.6	1907.15	1909.58	21B-BPA-LGIA-MW02
2202	405294.3	2048175.9	1907.87	1910.38	21B-BPA-UGIA-MW09
2204	408634.7	2049696.7	1901.29	1903.98	20B-LGIA-MW09
2206	408671.5	2049741.8	1902.16	1904.80	20B-LGIA-MW02
2208	408671.3	2049746.8	1902.12	1904.69	20B-UGIA-MW01
2210	408578.3	2049953.4	1901.29	1903.94	20B-UGIA-MW05
2212	408577.8	2049948.4	1901.27	1903.89	20B-LGIA-MW06
2214	408870.1	2049803.1	1901.78	1904.31	20B-UGIA-MW10
2216	408869.9	2050013.2	1901.57	1904.18	20B-UGIA-MW11
2218	408821.5	2048235.0	1903.83	1906.58	19C-UGIA-MW01
2220	408821.5	2048240.2	1903.98	1906.47	19C-LGIA-MW02
2222	409187.8	2048312.0	1898.97	1901.54	19C-UGIA-MW03
2224	409191.6	2048315.4	1899.13	1901.41	19C-LGIA-MW04
2226	409501.5	2048524.8	1898.02	1900.77	19C-LGIA-MW06
2228	409505.2	2048528.3	1898.30	1901.10	19C-UGIA-MW05
2230	404790.2	2048506.6	1913.92	1916.54	21B-BB-UGIA-MW01
2232	404791.9	2048511.1	1913.90	1916.62	21B-BB-LGIA-MW02
2234	404675.5	2048620.9	1909.29	1912.40	21B-BB-LGIA-MW04
2236	404672.2	2048624.8	1909.31	1912.63	21B-BB-UGIA-MW03
2238	404397.0	2048769.5	1910.01	1912.49	21B-DS-UGIA-MW08
2240	404392.5	2048770.8	1910.04	1912.46	21B-DS-LGIA-MW09
2242	404306.1	2049006.4	1909.28	1911.97	21B-DS-LGIA-MW03
2244	404395.2	2049014.7	1909.24	1911.67	21B-DS-LGIA-MW04
2246	404237.4	2048964.4	1909.51	1912.08	21B-DS-LGIA-MW02
2248	404234.4	2048912.2	1909.53	1912.12	21B-DS-LGIA-MW01
2250	404360.4	2049119.8	1908.68	1911.53	21B-DS-LGIA-MW05
2252	404309.9	2049190.3	1908.95	1911.56	21B-DS-LGIA-MW06
2254	404213.9	2049160.4	1909.81	1912.54	21B-DS-LGIA-MW07
2256	404072.4	2049462.1	1909.31	1911.67	21B-DS-LGIA-MW13
2258	404199.9	2048742.2	1909.95	1912.38	21B-DS-UGIA-MW10
2262	403943.6	2049053.0	1910.04	1912.31	21B-DS-LGIA-MW12
2264	403949.0	2049053.6	1910.05	1912.36	21B-DS-UGIA-MW11
2266	405878.5	2048322.7	1906.51	1909.01	21B-BPA-LGIA-MW08
2268	405881.0	2048319.1	1906.31	1909.00	21B-BPA-UGIA-MW07
2270	405826.3	2048815.4	1907.69	1910.03	21B-BPA-LGIA-MW05
2272	405748.9	2049529.2	1908.03	1910.55	21B-BPA-UGIA-MW11
2274	405605.9	2048949.9	1907.75	1910.14	21B-BPA-UGIA-MW06
2276	405258.2	2048734.2	1908.56	1911.01	21B-BPA-UGIA-MW12
2278	406222.5	2049149.8	1907.13	1909.89	21B-BPA-UGIA-MW03
2280	406222.3	2049145.2	1907.19	1909.96	21B-BPA-LGIA-MW04
2282	406589.1	2049560.5	1906.25	1908.55	21B-BPA-LGIA-MW10
2284	404824.2	2049438.3	1908.38	1910.96	21C-UGIA-MW01
2286	404824.4	2049443.7	1908.37	1910.97	21C-LGIA-MW02
2288	404695.0	2049641.6	1908.25	1910.65	210-UGIA-MW03
2290	404689.9	2049641.8	1908.09	1910.53	21C-LGIA-MW04
2292	404417.4	2049906.3	1907.78	1910.44	21C-UGIA-MW09
2294	404412.3	2049906.1	1907.60	1910.27	21C-LGIA-MW10
2296	404660.5	2050047.5	1907.48	1910.11	21C-LGIA-MW06
2298	404665.6	2050047.4	1907.62	1910.13	21C-UGIA-MW05
2300	405103.3	2050077.7	1907.21	1909.80	21C-LGIA-MW08
2302	405103.2	2050072.2	1907.04	1909.83	21C-UGIA--MW07
2304	403830.5	2048106.6	1910.47	1912.60	BKRD-UGIA-MW05
2306	403731.0	2048181.2	1910.32	1912.82	BKRD-LGIA-MW14
2308	403672.4	2048199.6	1909.91	1912.70	BKRD-LGIA-MW15
2310	403896.2	2048057.7	1918.44	1921.24	BKRD-LGIA-MW13
2312	404399.4	2048081.9	1915.57	1918.21	BKRD-UGIA-MW03
2314	404483.7	2048134.0	1916.52	1919.22	BKRD-LGIA-MW11
2316	404308.0	2048182.1	1913.81	1916.40	BKRD-LGIA-MW12
2318	404245.0	2048187.9	1914.34	1917.08	BKRD-UGIA-MW04
2320	404751.5	2048150.0	1914.34	1917.01	BKRD-UGIA-MW01
2322	404751.0	2048047.4	1914.66	1917.07	BKRD-UGIA-MW02
2324	407761.3	2048523.6	1903.53	1906.02	BKRB-UGIA-MW09
2326	407803.0	2048555.3	1903.18	1906.33	BKRD-LGIA-MW18
2328	407945.1	2048501.4	1903.08	1905.73	BKRD-UGIA-MW06
2330	408036.9	2048662.4	1902.93	1905.69	BKRD-LGIA-MW16
2332	408073.6	2048804.7	1902.74	1905.32	BKRD-LGIA-MW17
2334	408003.9	2048866.9	1903.05	1905.83	BKRD-UGIA-MW07
2336	408055.8	2049002.4	1902.17	1904.83	BKRD-UGIA-MW08
2338	407758.7	2049053.8	1903.05	1906.01	BKRD-UGIA-MW10
2340	407779.8	2048841.0	1903.52	1906.00	BKRD-LGIA-MW20
2342	407918.4	2048793.6	1903.83	1906.44	BKRD-LGIA-MW19

Survey of Monitoring Well Locations Cornhusker Army Ammunition Plant
Horizontal Datum - NAD 1983 Nebraska State Plane (Zone 2600) (Grid)
Vertical Datum - NAVD88
Surveyor - Adam Goertzen, Nebraska LS #704
Date - 3/03/2020

Point	Northing(Y)	Easting(X)	Ground Elevation	Elevation at Top North Edge of PVC Casing	Code
2347	409281.0	2051153.7	1900.74	1902.91	19B-UG1A-MW01
2346	409280.9	2051159.1	1900.41	1902.73	19B-LG1A-MW02
2351	409268.4	2050663.4	1901.02	1903.28	19B-UG1A-MW03
2352	409268.0	2050658.9	1900.88	1903.31	19B-LG1A-MW04
2353	409252.1	2050075.3	1900.96	1903.41	19B-UG1A-MW05
2354	409252.1	2050070.5	1901.09	1903.35	19B-LG1A-MW06
2358	409817.2	2048947.0	1902.43	1904.52	19C-LG1A-MW07

Tract 19B – Topographic Survey Map

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