BURNSIDE

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Appendix R - Part 2

Hydrogeological Assessment Report

Accessible formats and communication supports are available upon request:

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Appendix B

MECP Well Records

Table B-1: MECP Water Supply Well Records (Within 500 m) - Warden Avenue

MECP Well #	Well Use	Date Completed	Depth (m)	Construction Method	Static Water Level (m)	Recommended Pumping Rate (GPM)	Casing Diameter (inch)
6911441	Water Supply	5/28/1972	4.3	Bored	0.5	3.0	30.0
6911552	Water Supply	6/20/1973	4.6	Bored	0.6	3.0	30.0
6911440	Water Supply	5/18/1973	5.2	Bored	0.5	3.0	30.0
6911356	Water Supply	10/30/1972	7.0	Bored	1.6	5.0	30.0
6903351	Water Supply	3/4/1964	7.6	Bored	0.4	3.0	34.0
6908789	Water Supply	5/20/1968	10.4	Bored	0.0	2.0	34.0
6929528	Water Supply	9/30/2005	12.1	Drilled	1.4	60.0	6.3
6908773	Water Supply	3/28/1968	12.2	Bored	1.1	4.0	30.0
6924547	Water Supply	8/6/1998	12.8	Drilled	0.5	10.0	6.0
6903545	Water Supply	5/16/1962	14.6	Drilled	1.1	5.0	4.0
6916470	Water Supply	6/10/1982	15.5	Drilled	0.5	4.0	6.0
6903562	Water Supply	11/26/1962	21.3	Drilled	3.0	2.0	4.0
6903570	Water Supply	7/6/1965	23.2	Drilled	1.2	3.0	5.0
6911860	Water Supply	9/30/1973	23.5	Drilled	1.4	8.0	6.0
6919178	Water Supply	10/8/1987	25.0	Drilled	0.0	8.0	0.0
6903373	Water Supply	5/6/1960	25.3	Drilled	4.0	15.0	5.0
7106315	Water Supply	5/15/2008	28.8	Drilled	5.4	19.8	6.1
6903552	Water Supply	10/22/1965	29.3	Drilled	2.0	9.0	5.0
6903369	Water Supply	11/9/1961	31.4	Drilled	0.9	4.0	5.0
6903553	Water Supply	2/14/1966	31.7	Drilled	2.8	10.0	5.0
6911661	Water Supply	10/4/1973	31.7	Drilled	2.0	5.0	6.0
6911851	Water Supply	11/8/1973	32.0	Drilled	4.2	20.0	6.0
6912948	Water Supply	10/8/1975	33.2	Drilled	3.6	5.0	6.0
6903566	Water Supply	8/13/1964	33.5	Drilled	3.7	4.0	5.0
6913438	Water Supply	7/15/1976	33.5	Drilled	5.2	20.0	6.0
6903567	Water Supply	10/9/1964	35.4	Drilled	4.6	5.0	5.0
6913336	Water Supply	12/8/1975	36.0	Drilled	5.6	10.0	6.0
6917614	Water Supply	4/23/1985	36.0	Drilled	5.1	7.0	6.0
6924955	Water Supply	7/10/1999	36.0	Drilled	4.1	20.0	6.0
6912961	Water Supply	9/16/1975	37.5	Drilled	3.3	15.0	6.0
6903360	Water Supply	8/18/1966	37.8	Drilled	2.3	7.0	5.0
6908769	Water Supply	6/3/1968	39.6	Drilled	2.9	4.0	5.0
6911436	Water Supply	4/24/1973	39.6	Drilled	3.7	4.0	6.0
6911557	Water Supply	7/24/1973	39.6	Drilled	3.0	15.0	6.0
7134478	Water Supply	10/12/2009	39.6	Drilled	6.3	0.0	6.0
6912318	Water Supply	5/24/1974	40.2	Drilled	3.0	4.0	6.0
6912460	Water Supply	4/30/1974	40.2	Drilled	2.8	10.0	6.0
6911437	Water Supply	4/19/1973	40.8	Drilled	3.7	5.0	6.0

Table B-1: MECP Water Supply Well Records (Within 500 m) - Warden Avenue

MECP Well #	Well Use	Date Completed	Depth (m)	Construction Method	Static Water Level (m)	Recommended Pumping Rate (GPM)	Casing Diameter (inch)
6913631	Water Supply	4/20/1976	40.8	Drilled	3.7	10.0	6.0
6910415	Water Supply	8/16/1971	41.1	Drilled	3.7	6.0	6.0
6917251	Water Supply	10/17/1984	41.8	Drilled	3.4	10.0	6.0
6909326	Water Supply	7/2/1969	42.1	Drilled	3.3	10.0	6.0
6912962	Water Supply	10/23/1975	43.0	Drilled	4.8	10.0	6.0
6910100	Water Supply	11/27/1970	43.3	Drilled	2.8	8.0	6.0
6927778	Water Supply	2/23/2004	43.9	Drilled	45.6	-	6.0
7189685	Water Supply	9/12/2012	44.5	Drilled	4.5	15.0	6.3
6912364	Water Supply	6/5/1974	46.3	Drilled	4.3	5.0	6.0
6915726	Water Supply	7/25/1980	47.5	Drilled	4.2	10.0	6.0
6923540	Water Supply	2/22/1996	47.5	Drilled	1.1	10.0	6.0
6903572	Water Supply	11/9/1967	48.5	Drilled	1.9	7.0	5.0
6916005	Water Supply	4/6/1981	48.8	Drilled	7.0	10.0	6.0
6911526	Water Supply	7/5/1973	49.7	Drilled	1.9	10.0	6.0
6915049	Water Supply	7/31/1978	50.3	Drilled	2.4	30.0	6.0
6919926	Water Supply	10/5/1988	50.9	Drilled	3.3	15.0	6.0
6912760	Water Supply	1/25/1975	51.2	Drilled	1.9	10.0	6.0
6922877	Water Supply	9/8/1994	51.2	Drilled	5.1	10.0	6.0
6914855	Water Supply	10/19/1978	51.8	Drilled	2.3	30.0	6.0
6921420	Water Supply	3/7/1991	53.3	Drilled	0.0	0.0	6.0
6903368	Water Supply	3/17/1966	54.0	Drilled	4.6	3.0	5.0
6903568	Water Supply	1/20/1965	54.6	Drilled	3.7	3.0	5.0
6919168	Water Supply	7/20/1987	54.9	Drilled	0.0	150.0	8.0
6912796	Water Supply	6/12/1975	55.5	Drilled	5.1	6.0	6.0
6903565	Water Supply	5/11/1963	57.0	Drilled	2.3	2.0	5.0
6903577	Water Supply	11/16/1960	57.0	Drilled	0.3	27.0	10.0
6914819	Water Supply	10/3/1978	58.5	Drilled	7.4	3.0	6.0
6921447	Water Supply	5/17/1991	58.8	Drilled	8.9	10.0	6.0
6903329	Water Supply	4/20/1966	59.1	Drilled	4.5	0.0	5.0
6908770	Water Supply	8/10/1968	59.7	Drilled	6.3	8.0	5.0
6923597	Water Supply	5/28/1996	60.0	Drilled	3.3	10.0	6.0
6911559	Water Supply	7/15/1973	61.0	Drilled		0.0	-
6908799	Water Supply	5/23/1968	61.6	Drilled	6.5	4.0	5.0
6912312	Water Supply	7/17/1974	62.5	Drilled	8.1	15.0	6.0
6912303	Water Supply	6/13/1974	62.8	Drilled	6.6	5.0	6.0
6917886	Water Supply	8/13/1985	64.0	Drilled	3.5	30.0	6.0
6915451	Water Supply	8/14/1979	64.9	Drilled	0.0	35.0	6.0
6919813	Water Supply	9/22/1988	65.8	Drilled	2.8	15.0	6.0

Table B-1: MECP Water Supply Well Records (Within 500 m) - Warden Avenue

MECP Well #	Well Use	Date Completed	Depth (m)	Construction Method	Static Water Level (m)	Recommended Pumping Rate (GPM)	Casing Diameter (inch)
6910649	Water Supply	7/8/1971	67.1	Drilled	7.9	8.0	6.0
6920494	Water Supply	6/27/1989	67.1	Drilled	0.0	20.0	6.0
6917027	Water Supply	5/11/1983	67.4	Drilled	3.3	8.0	6.0
6922583	Water Supply	5/13/1994	70.1	Drilled	4.0	10.0	6.0
6903563	Water Supply	2/7/1964	71.6	Drilled	2.0	3.0	5.0
7165968	Water Supply	5/24/2011	76.8	Drilled	0.8	0.0	6.0
6930332	Water Supply	4/11/2006	85.3	Drilled	32.1	-	6.0
6920379	Water Supply	4/19/1989	91.4	Drilled	3.9	4.0	6.0
6928626	Water Supply	11/19/2004	97.8	Drilled	1.0	0.0	6.1
6903370	Water Supply	6/18/1954	99.7	Drilled	5.6	0.0	6.0

Table B-2: MECP Water Supply Well Records (within 500 m) - Kennedy Road

MECP Well #	Well Use	Date Completed	Depth (m)	Construction Method	Static Water Level (m)	Recommended Pumping Rate (GPM)	Casing Diameter (inch)
6903817	Water Supply	11/17/1961	4.9	Bored	0.27	3.0	34.0
6903818	Water Supply	11/18/1961	6.4	Bored	0.91	2.0	34.0
6903575	Water Supply	11/23/1962	7.6	Bored	0.91	5.0	34.0
6903819	Water Supply	6/16/1962	7.9	Bored	0.91	10.0	34.0
6911865	Water Supply	8/15/1973	7.9	Bored	1.31	3.0	30.0
6903815	Water Supply	9/6/1962	8.8	Bored	1.68	10.0	34.0
6912949	Water Supply	10/27/1975	9.1	Drilled	1.31	10.0	6.0
6903820	Water Supply	6/19/1963	10.1	Bored	1.49	2.0	34.0
6914375	Water Supply	12/21/1977	10.7	Bored	0.91	2.0	30.0
6914160	Water Supply	7/21/1977	11.0	Bored	1.13	3.0	30.0
6924113	Water Supply	11/6/1997	11.0	Drilled	0.73	10.0	6.0
6903836	Water Supply	7/3/1963	11.3	Bored	2.32	5.0	34.0
6903834	Water Supply	11/13/1959	11.6	Drilled	1.40	10.0	5.0
6903830	Water Supply	10/12/1959	13.1	Drilled	2.13	0.0	6.0
6929074	Water Supply	5/2/2005	13.7	Drilled	3.0	6.2	6.0
6919239	Water Supply	11/24/1987	19.8	Drilled	3.08	10.0	6.0
6915314	Water Supply	11/1/1979	24.4	Drilled	0.46	10.0	6.0
6903831	Water Supply	12/15/1961	27.4	Drilled	2.77	3.0	4.0
6922053	Water Supply	8/1/1992	28.4	Drilled	0.00	30.0	6.0
6903578	Water Supply	11/16/1960	30.8	Drilled	5.58	8.0	5.0
6916795	Water Supply	8/11/1983	31.7	Drilled	0.00	12.0	6.0
7279714	Water Supply	12/27/2016	34.1	Drilled	-0.27	10.0	6.0
6915745	Water Supply	10/8/1980	37.8	Drilled	0.91	25.0	6.0
6915993	Water Supply	5/6/1981	38.1	Drilled	5.58	10.0	6.0
6919603	Water Supply	5/27/1988	38.1	Drilled	1.40	7.0	6.0
6922691	Water Supply	6/15/1994	38.7	Drilled	0.55	0.0	8.0
7181506	Water Supply	4/27/2012	39.0	Drilled	2.04	10.0	6.3
6923625	Water Supply	6/20/1996	40.2	Drilled	2.87	0.0	6.0
6903828	Water Supply	2/26/1964	44.8	Drilled	5.12	7.0	7.0
6925228	Water Supply	1/13/2000	45.1	Drilled	5.12	20.0	6.0
6903576	Water Supply	12/10/1965	45.7	Drilled	4.63	7.0	7.0
6924816	Water Supply	2/15/1999	53.3	Drilled	1.13	0.0	6.0
6919388	Water Supply	2/24/1988	54.3	Drilled	2.50	10.0	6.0
6903827	Water Supply	1/10/1963	56.4	Drilled	4.18	10.0	7.0
6903829	Water Supply	10/2/1962	57.6	Drilled	3.17	5.0	4.0
6929295	Water Supply	6/8/2005	60.9	Drilled	26.0	-	6.0
6922816	Water Supply	8/11/1994	71.6	Drilled	0.55	4.0	6.0
7040063	Water Supply	10/31/2006	177.0	Drilled	27.5	1.8	2.0

Water Well Records

Friday, November 05, 2021
2:19:13 PM

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA	17 633466 4861552 W	2010/08 6032						7150735 (Z108907) A068253 A	0025
MARKHAM TOWN (MARKHA	17 633455 4861602 W	2009/11 6032	1.97			MO		7137567 (Z108621) A068253	SAND SLTY SILT 0015 GREY SILT SNDY 0015 BRWN SAND SLTY 0021 GREY SILT SNDY 0021
MARKHAM TOWN (MARKHA	17 632687 4863134 W	2013/08 5459				NU		7208224 (Z168219) A	
MARKHAM TOWN (MARKHA	17 632640 4862901 W	2014/05 7472	2.04			MO	0023 10	7224871 (Z189533) A163625	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0033
MARKHAM TOWN (MARKHA	17 632440 4862460 W	2014/05 7472	0.75			MO	0016 10	7224877 (Z189522) A163652	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0026
MARKHAM TOWN (MARKHA	17 632695 4862628 W	2014/05 7472	2.04			MO	0023 10	7224878 (Z189521) A163651	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0035
MARKHAM TOWN (MARKHA	17 632628 4862297 W	2014/05 7472	0.75			MO	0025 1	7224879 (Z189520) A163654	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0026
MARKHAM TOWN (MARKHA	17 632785 4862154 W	2014/05 7472	2.04			MO	0056 10	7224880 (Z189519) A163655	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0030 GREY SILT FSND DNSE 0066
MARKHAM TOWN (MARKHA	17 632646 4861509 W	2014/05 7472	2.04			MO	0023 10	7224883 (Z189540) A166019	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0030 GREY SILT FSND DNSE 0033
MARKHAM TOWN (MARKHA	17 632552 4861976 W	2014/05 7472	2.04			MO	0023 10	7224891 (Z189517) A163657	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0033
MARKHAM TOWN (MARKHA	17 633077 4862769 W	2014/07 7230						7226765 (C26684) A153726 P	
MARKHAM TOWN (MARKHA	17 633222 4861212 W	2014/09 7360	0.75	UT 0011		MO	0035 5	7230120 (Z187267) A167940	BRWN SAND LTCL 0020 GREY SAND SILT 0040
MARKHAM TOWN (MARKHA	17 632739 4862956 W	2015/03 6809						7260112 (C29950) A177532 P	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA	17 632653 4862166 W	2014/05 7472	2.04			MO	0023 10	7224890 (Z189518) A163653	BRWN LOAM SILT LOOS 0005 BRWN SILT FSND PCKD 0015 BRWN FSND GRVL PCKD 0033
MARKHAM TOWN (MARKHA 04 003	17 632960 4861474 W	2005/09 1663	6.25	FR 0030	15/22/54/1:20	DO	0030 2	6929528 (Z36748) A023460	BRWN CLAY 0001 BRWN SAND GRVL STNS 0002 GREY CLAY GRVL STNS 0025 BLUE CLAY 0030 GREY MSND 0031 GREY FSND SILT 0038 BLUE CLAY 0040
MARKHAM TOWN (MARKHA 04 020	17 632703 4860955 W	2006/04 1663	2.46	FR 0243	105//15/1:0	DO	0243 5	6930332 (Z36806) A042046	BRWN CLAY GRVL 0026 GREY CLAY GRVL 0086 BRWN MSND 0091 GREY CLAY SILT SAND 0118 GREY CLAY SILT 0219 GREY CLAY GRVL 0243 BRWN MSND 0248 BRWN FSND SILT 0266 GREY CLAY STNS GRVL 0280
MARKHAM TOWN (MARKHA 04 020	17 633021 4860841 W	2006/05 5459	5					6930577 (Z35892) A032905 A	
MARKHAM TOWN (MARKHA 04 020	17 633072 4860867 W	2006/12 3108				NU		7039919 (Z30633) A	
MARKHAM TOWN (MARKHA 04 021	17 632744 4861433 W	2008/05 1350	6.13	FR 0088	18/46/16/1:	DO		7106315 (Z76178) A071732	BRWN CLAY 0007 GREY CLAY SAND 0040 GREY GRVL CLAY 0068 BRWN SILT SAND 0088 BRWN SAND 0094
MARKHAM TOWN (MARKHA 04 021	17 632862 4861174 W	2008/01 5459			///:			7102254 (Z75605) A063170 A	
MARKHAM TOWN (MARKHA 04 023	17 632587 4862028 W	2004/11 5459	6.11		11/165/10/1:	DO	0310 6	6928626 (Z16081) A022179	BRWN CLAY SAND STNS 0032 GREY CLAY STNS 0081 GREY CLAY SILT 0186 GREY CLAY SNDY 0224 GREY CLAY STNS 0234 GREY CLAY SILT 0272 GREY SAND STNS 0321
MARKHAM TOWN (MARKHA 05 020	17 633532 4861119 W	2007/06 4102			///:			7047516 (Z63433) A	
MARKHAM TOWN (MARKHA 05 020	17 633524 4861114 W	2007/06 4102			///:			7047517 (Z63435) A	
MARKHAM TOWN (MARKHA CON 04 019	17 633131 4860770 W	1987/10 5459		FR 0005	/1/10/6:0	DO		6919178 (NA)	BRWN FILL 0006 BRWN CLAY 0015 BLUE CLAY STNS 0035 BLUE CLAY SOFT 0045 GREY GRVL 0082
MARKHAM TOWN (MARKHA CON 04 019	17 633150 4860786 W	1966/04 5420	5	FR 0189	48/75/5/5:0	DO	0190 4	6903329 ()	LOAM 0002 BRWN CLAY BLDR 0045 BLUE CLAY STNS 0080 BLUE CLAY 0173 GRVL MSND CLAY 0189 GREY FSND 0194
MARKHAM TOWN (MARKHA CON 04 019	17 633095 4860833 W	1968/08 5420	5	FR 0185	68/168/9/10:0	DO	0185 8	6908770 ()	BRWN CLAY STNS 0018 HPAN BLDR 0065 BLUE CLAY STNS 0115 HPAN 0135 BLUE CLAY 0172 GRVL SILT 0174 BLUE CLAY 0185 MSND GRVL 0189 MSND GRVL 0192 SILT 0196
MARKHAM TOWN (MARKHA CON 04 020	17 633045 4860813 W	1968/05 5420	5	FR 0198	70/180/4/4:0	DO	0198 4	6908799 ()	PRDG 0044 STNS CLAY 0065 GRVL CLAY 0067 BLUE CLAY STNS 0198 MSND 0202
MARKHAM TOWN (MARKHA CON 04 020	17 632815 4860833 W	1971/07 5459	6	FR 0216	85/130/10/1:0	DO	0216 4	6910649 ()	BLUE CLAY BLDR 0080 BLUE CLAY MSND 0216 BLUE MSND 0220
MARKHAM TOWN (MARKHA CON 04 020	17 632895 4860993 W	1972/10 5459	30	FR 0018	17///:	DO		6911356 ()	BLCK LOAM 0002 BRWN CLAY SAND 0012 BRWN SAND 0018 BRWN GRVL 0023

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 04 020	17 632830 4860838 W	1989/06 5459	6	FR 0199	/199/25/2:0	DO	0199 6	6920494 (58337)	BRWN CLAY SNDY 0007 GREY CLAY SNDY 0048 GREY CLAY SLTY 0091 GREY STNS SAND 0092 GREY CLAY SLTY 0114 GREY CLAY SNDY 0162 GREY SAND SLTY 0163 GREY CLAY SLTY 0197 GREY SAND CLN 0208 GREY CLAY SNDY 0220
MARKHAM TOWN (MARKHA CON 04 020	17 632945 4861073 W	1973/04 5459	6	FR 0118	40/80/4/3:30	DO	0129 6	6911436 ()	BRWN CLAY 0018 BLUE CLAY STNS 0103 SAND CLAY 0118 SAND 0130
MARKHAM TOWN (MARKHA CON 04 020	17 632995 4861093 W	1973/04 5459	6	FR 0108	40/75/5/2:0	DO	0134 4	6911437 ()	BRWN CLAY 0018 BLUE CLAY STNS 0108 SAND 0134
MARKHAM TOWN (MARKHA CON 04 020	17 633010 4861168 W	1988/09 5459	6	FR 0210	30/216/15/4:0	DO	0210 6	6919813 (37773)	BRWN CLAY STNS 0024 GRVL 0035 BLUE CLAY STNS 0068 BLUE CLAY SOFT 0180 BLUE CLAY STNS 0210 SAND CSND 0216
MARKHAM TOWN (MARKHA CON 04 020	17 632895 4861043 W	1973/06 5459	30	UK 0008	7//3/:	DO		6911552 ()	LOAM 0002 BRWN SAND 0008 BRWN SAND 0014 CLAY 0015
MARKHAM TOWN (MARKHA CON 04 020	17 632975 4861003 W	1980/07 5459	6	FR 0156	45/145/10/:	DO	0150 6	6915726 ()	BLCK LOAM 0002 BRWN CLAY SOFT 0019 BLUE CLAY STNS 0023 BLUE CLAY SOFT 0099 BLUE CLAY SAND SOFT 0110 BLUE CLAY HARD 0150 BLUE SAND 0156
MARKHAM TOWN (MARKHA CON 04 020	17 632926 4861060 W	1991/10 5459			//5/2:0	IR		6921661 (85092) A	BLCK LOAM 0002 BRWN CLAY STNS SNDY 0012 GREY CLAY STNS 0110 GREY CLAY SNDY 0127 GREY SAND SILT 0137 GREY CLAY SNDY
MARKHAM TOWN (MARKHA CON 04 020	17 632915 4861043 W	1981/04 5459	6	FR 0156	75/150/10/:	DO	0157 3	6916005 ()	BLCK LOAM 0002 BRWN CLAY STNS 0020 BLUE CLAY GRVL 0045 BLUE CLAY HARD 0082 BLUE CLAY SOFT 0144 BLUE FSND 0156 BRWN SAND 0160
MARKHAM TOWN (MARKHA CON 04 020	17 633056 4861042 W	1975/06 5459	6	FR 0178	55/175/6/3:0	DO	0179 3	6912796 ()	LOAM 0002 BRWN CLAY 0017 BLUE CLAY 0045 BLUE CLAY 0140 BLUE CLAY 0178 BLUE MSND 0182
MARKHAM TOWN (MARKHA CON 04 020	17 632771 4861007 W	1975/10 5459	6	UK 0096	39/105/5/4:0	DO	0103 6	6912948 ()	BRWN CLAY 0007 BRWN SAND GRVL 0028 BLUE CLAY STNS 0096 BLUE FSND 0109
MARKHAM TOWN (MARKHA CON 04 020	17 632855 4861033 W	1973/11 5459	6	FR 0092	45/105/20/1:30	DO	0098 6	6911851 ()	BRWN CLAY 0022 BLUE CLAY STNS 0092 SAND 0105
MARKHAM TOWN (MARKHA CON 04 020	17 633066 4861071 W	1974/04 5459	6	FR 0128	30/120/10/3:0	DO	0128 4	6912460 ()	BRWN CLAY 0016 BLUE CLAY 0128 BLUE FSND 0132
MARKHAM TOWN (MARKHA CON 04 020	17 633059 4860807 W	1974/07 5459	6	FR 0193	87/205/25/1:30	DO	0201 4	6912312 ()	BRWN CLAY 0012 BLUE CLAY STNS 0183 BLUE SAND 0186 FSND 0191 CLAY 0193 GREY SAND 0205
MARKHAM TOWN (MARKHA CON 04 020	17 633135 4860833 W	1973/10 5459	6	FR 0097	22/100/5/3:0	DO	0096 7	6911661 ()	BRWN CLAY 0018 BLUE CLAY STNS 0097 FSND 0104
MARKHAM TOWN (MARKHA CON 04 020	17 632642 4860954 W	1985/08 5459	6	FR 0198	38/200/40/3:0	DO	0204 6	6917886 ()	LOAM DKCL 0004 BRWN CLAY 0016 BLUE CLAY HARD 0078 BLUE CLAY STNS 0110 BLUE CLAY SOFT 0198 BLUE SAND MGRD 0210
MARKHAM TOWN (MARKHA CON 04 020	17 633036 4861130 W	1966/08 1413	5	FR 0124	25/73/10/2:0	DO	0120 4	6903360 ()	BLUE CLAY STNS 0103 FSND 0106 BLUE MSND 0107 FSND 0118 CSND 0124
MARKHAM TOWN (MARKHA CON 04 020	17 632957 4861038 W	1994/09 5459	6	FR 0160	55/160/10/1:30	DO	0162 6	6922877 (141527)	BRWN CLAY HARD 0014 GREY CLAY STNS 0021 GREY CLAY HARD 0048 GREY CLAY SAND 0130 GREY CLAY SOFT 0147 GREY CLAY SAND SOFT 0160 GREY SAND 0168

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 04 020	17 632964 4860763 W	2016/09 4102						7272281 (Z135977) A	
MARKHAM TOWN (MARKHA CON 04 020	17 633089 4860845 W	1964/03 5420	34	FR 0021	4///:	DO		6903351 ()	LOAM 0001 BRWN CLAY 0009 BLUE CLAY STNS 0021 GRVL MSND 0025
MARKHAM TOWN (MARKHA CON 04 020	17 632892 4861033 W	2011/05 5459	6		9/31/76/1:	DO	0249 3	7165968 (Z115955) A102810	BRWN SAND SOFT 0010 GREY GRVL SAND SLTY 0022 GREY FSND SILT SOFT 0155 GREY MSND SILT SOFT 0161 GREY CLAY SILT SOFT 0245 GREY GRVL FSND LOOS 0252
MARKHAM TOWN (MARKHA CON 04 020	17 632866 4861066 W	1975/10 5459	6	UK 0138	52/135/15/4:0	DO	0138 3	6912962 ()	BRWN CLAY 0014 BRWN GRVL 0025 BLUE CLAY 0115 BLUE SAND 0117 BLUE CLAY 0121 BLUE FSND 0135 BLUE CLAY SAND 0138 BLUE SAND GRVL 0141
MARKHAM TOWN (MARKHA CON 04 020	17 632875 4861043 W	1976/07 5459	6	FR 0097	56/105/20/3:30	DO	0105 3	6913438 ()	BRWN CLAY 0007 BRWN SAND CLAY 0026 BLUE CLAY STNS 0061 BLUE CLAY HARD 0097 GREY CGVL 0110
MARKHAM TOWN (MARKHA CON 04 020	17 633055 4861023 W	1975/12 5459	6	FR 0116	60/95/8/3:30	DO	0115 3	6913336 ()	FILL 0003 BRWN CLAY STNS 0026 BLUE CLAY HARD 0040 BLUE CLAY SOFT 0116 BLUE CSND 0118
MARKHAM TOWN (MARKHA CON 04 020	17 633031 4861033 W	2009/10 5459	6	FR 0129	68/79/10/1:0	DO	0123 6	7134478 (Z101426) A075281	BRWN TILL HARD 0018 GREY CLAY SILT STNS 0110 BRWN FSND LOOS 0130
MARKHAM TOWN (MARKHA CON 04 021	17 632595 4861063 W	1978/10 1350	6	FR 0181	80/185/3/2:0	ST DO	0187 5	6914819 ()	YLLW CLAY 0030 GREY SILT CLAY SOFT 0052 GREY SILT 0055 GREY CLAY 0110 GREY CLAY GRVL STNS 0181 GREY FSND 0192
MARKHAM TOWN (MARKHA CON 04 021	17 632656 4861095 W	1974/06 5459	6	FR 0203	71/195/6/4:0	DO	0203 3	6912303 ()	LOAM 0002 BRWN CLAY 0020 BLUE CLAY STNS 0147 GRVL 0148 BLUE CLAY 0203 SAND 0206
MARKHAM TOWN (MARKHA CON 04 021	17 633015 4861263 W	1966/03 5420	5	FR 0174	50/160/4/20:0	DO	0173 4	6903368 ()	PRDG 0030 BLUE CLAY STNS 0080 BLUE CLAY 0120 BLUE CLAY STNS 0174 CSND GRVL 0177
MARKHAM TOWN (MARKHA CON 04 021	17 632826 4861474 W	1992/06 3903	6	FR 0120	44/101/7/6:0	CO	0115 5	6921955 (104234)	BRWN GRVL CLAY LYRD 0020 GREY CLAY STNS HARD 0098 GREY SAND FSND LOOS 0120
MARKHAM TOWN (MARKHA CON 04 021	17 632969 4861486 W	1999/07 3108	6 5	FR 0108	44/108/30/1:30	DO	0108 9	6924955 (188976)	BRWN CLAY STNS 0018 BLUE CLAY GRVL STNS 0055 BLUE CLAY GRVL 0096 BLUE CLAY SAND 0102 BLUE SAND 0118
MARKHAM TOWN (MARKHA CON 04 021	17 632972 4861586 W	1996/05 3108	6 5	FR 0188	35/195/12/4:0	DO	0191 6	6923597 (156509)	BRWN CLAY GRVL 0025 BLUE CLAY GRVL 0079 BLUE CLAY HARD 0115 BLUE CLAY SOFT 0118 BLUE CLAY HARD 0163 GREN CLAY 0188 FSND 0197
MARKHAM TOWN (MARKHA CON 04 021	17 633003 4861400 W	1985/04 3108	6	FR 0100	55/115/10/3:0	DO	0115 3	6917614 ()	BRWN CLAY 0005 BRWN SAND GRVL 0018 BLUE CLAY GRVL STNS 0038 BLUE CLAY SNDY 0089 BLUE SAND 0118
MARKHAM TOWN (MARKHA CON 04 022	17 632828 4861772 W	1961/11 4813	5	FR 0072	10/60/6/3:0	DO		6903369 ()	BLCK LOAM 0003 BRWN CLAY 0027 GRVL 0072 STNS MSND 0096 GRVL 0103
MARKHAM TOWN (MARKHA CON 04 022	17 632775 4861691 W	2012/09 1413	6.25	FR 0146	48/130/30/1:	DO	0143 3	7189685 (Z154124) A132724	BRWN SAND CLAY TILL 0005 BRWN CLAY HARD 0022 GREY CLAY STNS HARD 0038 BRWN SAND MGRD 0042 GREY CLAY HARD DNSE 0137 BLCK SAND GRVL CLN 0146
MARKHAM TOWN (MARKHA CON 04 023	17 632761 4861696 W	1998/08 1413	6	FR 0042	6/37/14/1:0	DO ST	0039 3	6924547 (188839)	BRWN CLAY DNSE 0008 BRWN CLAY SAND GRVL 0037 BRWN SAND MGRD 0042

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 04 023	17 632632 4862887 W	1996/02 1413	6	FR 0156	12/140/50/1:0	DO	0149 7	6923540 (166535)	BLCK LOAM SOFT 0002 BRWN SAND SOFT 0010 BRWN CLAY STNS HARD 0037 GREY CLAY STNS HARD 0117 GREY CLAY DNSE 0146 GREY SAND STNS CLN 0156
MARKHAM TOWN (MARKHA CON 04 023	17 632388 4861997 W	2017/08 7215						7306222 (C38955) A212527 P	
MARKHAM TOWN (MARKHA CON 04 023	17 632437 4861911 W	2019/05 7464						7338170 (C42859) A250701 P	
MARKHAM TOWN (MARKHA CON 04 024	17 632705 4862582 W	1994/05 3108	6	FR 0215	43/150/45/1:0	DO	0221 7	6922583 (143793)	LOAM 0003 BRWN CLAY SAND 0019 BRWN CLAY GRVL 0022 BLUE CLAY 0179 BLUE CLAY SAND 0215 BLUE SAND 0230
MARKHAM TOWN (MARKHA CON 04 025	17 632399 4863018 W	1954/06 4529	6 4	FR 0149 FR 0327	60/200/8/9:0	ST DO		6903370 ()	PRDG 0149 GREY FSND CLAY 0187 GREY CLAY STNS 0230 GREY CLAY MSND 0325 SHLE 0327
MARKHAM TOWN (MARKHA CON 04 025	17 632491 4863095 W	1960/04 1622	5					6903371 () A	LOAM 0001 BRWN CLAY 0022 BLUE CLAY GRVL 0205
MARKHAM TOWN (MARKHA CON 04 025	17 632508 4863076 W	1960/05 1622	5	FR 0070	43/83/18/15:0	ST DO	0075 8	6903373 ()	LOAM 0001 BRWN CLAY 0022 BLUE CLAY GRVL 0070 CSND 0083
MARKHAM TOWN (MARKHA CON 04 025	17 632255 4862862 W	2019/02 7230	2.04	UT 0017	///:	MT	0015 10	7331793 (Z304549) A265038	BRWN FILL BSLT GRVL 0002 GREY SILT SAND GRVL 0007 BRWN TILL GRVL DNSE 0025
MARKHAM TOWN (MARKHA CON 04 025	17 632415 4863023 W	1978/10 5459	6	FR 0165	25/165/40/1:0	DO	0165 3	6914855 ()	BRWN CLAY STNS 0011 GREY STNS 0019 BLUE CLAY STNS 0159 GREY SAND STNS 0170
MARKHAM TOWN (MARKHA CON 04 025	17 632615 4863083 W	1978/07 5459	6	FR 0158	26/158/40/1:0	DO	0158 3	6915049 ()	BRWN CLAY STNS FILL 0003 BRWN CLAY STNS 0006 GREY STNS SAND 0012 BRWN CLAY STNS 0023 BLUE CLAY STNS 0156 GREY SAND CLN CGRD 0165
MARKHAM TOWN (MARKHA CON 05 019	17 633292 4860941 W	1962/05 3414	4	FR 0047	12/44/5/8:0	DO		6903545 ()	CLAY MSND STNS 0001 GREY CLAY BLDR 0047 GRVL 0048
MARKHAM TOWN (MARKHA CON 05 019	17 633482 4860995 W	1965/10 5420	5	FR 0094	22/90/12/4:0	DO	0092 4	6903552 ()	CLAY BLDR 0055 CLAY MSND STNS 0092 GRVL MSND 0096
MARKHAM TOWN (MARKHA CON 05 019	17 633205 4860797 W	1966/02 5420	5	FR 0102	30/55/14/15:0	DO	0098 4	6903553 ()	CLAY BLDR 0045 CLAY STNS 0102 MSND 0104
MARKHAM TOWN (MARKHA CON 05 019	17 633265 4860803 W	1968/06 5420	5	FR 0120	31/110/4/8:0	DO	0120 8	6908769 ()	PRDG 0023 BLUE CLAY STNS 0038 BLUE CLAY 0110 BLUE CLAY BLDR 0120 MSND SILT GRVL 0130
MARKHAM TOWN (MARKHA CON 05 019	17 633235 4860783 W	1968/05 5420	34	FR 0030	///:	DO		6908789 ()	LOAM 0001 BRWN CLAY 0011 BLUE CLAY BLDR 0034
MARKHAM TOWN (MARKHA CON 05 020	17 633290 4861044 W	1964/02 4610	5 5	FR 0176 FR 0205	22/190/4/5:0	DO	0201 7	6903563 ()	LOAM 0001 MSND CLAY 0008 HPAN BLDR 0071 BLUE CLAY GRVL 0175 MSND CLAY 0205 MSND GRVL 0208 SHLE 0235
MARKHAM TOWN (MARKHA CON 05 020	17 633492 4861138 W	1975/09 5459	6	UK 0119	35/100/25/3:0	DO	0120 3	6912961 ()	LOAM 0002 BRWN CLAY 0008 STNS 0010 BLUE CLAY 0085 BLUE GRVL SAND 0090 BLUE CLAY 0119 BLUE CSND 0123

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 05 020	17 632865 4860808 W	1991/05 3108	6	FR 0188	96/185/50/2:0	DO	0189 4	6921447 (74245)	LOAM 0001 BRWN CLAY GRVL 0014 BLUE CLAY SAND 0067 BLUE CLAY HARD 0107 BLUE CLAY GRVL 0114 SAND 0115 BLUE CLAY HARD 0158 SAND 0159 BLUE CLAY SOFT 0188 SAND 0193
MARKHAM TOWN (MARKHA CON 05 020	17 633235 4861043 W	1979/08 5459	6	FR 0202	/202/40/3:0	DO	0202 6	6915451 ()	BRWN CLAY 0011 GREY SAND STNS 0016 BRWN CLAY STNS 0027 BLUE CLAY STNS 0126 BLUE CLAY 0135 BLUE CLAY SAND 0190 GREY SAND STNS 0194 BLUE CLAY STNS 0199 GREY STNS SAND CLN 0213
MARKHAM TOWN (MARKHA CON 05 020	17 633322 4861230 W	1967/11 5420	5	FR 0155	20/80/9/3:0	DO	0155 4	6903572 ()	CLAY 0118 MSND 0159
MARKHAM TOWN (MARKHA CON 05 020	17 633322 4860982 W	1965/07 5420	5	FR 0066	13/22/4/6:0	DO		6903570 ()	LOAM 0002 CLAY BLDR 0045 BLUE CLAY 0066 CLAY 0076
MARKHAM TOWN (MARKHA CON 05 020	17 633277 4861242 W	1965/06 5420	5					6903569 () A	CLAY BLDR 0055 CLAY MSND 0175 MSND CLAY 0176 GRVL MSND CLAY 0210
MARKHAM TOWN (MARKHA CON 05 020	17 633362 4861203 W	1965/01 5420	5	FR 0176	40/175/4/20:0	DO	0175 4	6903568 ()	LOAM 0002 BRWN CLAY MSND STNS 0040 BLUE CLAY STNS 0065 BLUE CLAY MSND 0120 HPAN MSND 0167 BLUE CLAY 0176 MSND 0179
MARKHAM TOWN (MARKHA CON 05 020	17 633443 4861165 W	1964/10 4813	5	FR 0108	50/101/14/6:0	DO	0112 4	6903567 ()	CLAY STNS 0030 BLUE CLAY 0090 SILT 0108 MSND 0116
MARKHAM TOWN (MARKHA CON 05 020	17 633335 4861263 W	1969/07 3414	6 4	SA 0138	35/45/10/3:0	DO	0134 4	6909326 ()	CLAY 0002 BRWN CLAY 0012 FSND 0040 MSND 0080 BLDR GRVL CLAY 0135 MSND 0138
MARKHAM TOWN (MARKHA CON 05 020	17 633272 4861066 W	1963/05 5420	5	FR 0183	25/185/2/7:0	DO	0183 4	6903565 ()	CLAY STNS 0007 BLDR CLAY 0050 CLAY STNS 0137 FSND 0183 MSND 0187
MARKHAM TOWN (MARKHA CON 05 020	17 633196 4861112 W	1962/11 3414	4	FR 0070	32/66/4/20:0	DO		6903562 ()	CLAY STNS 0029 CLAY MSND 0038 BLUE CLAY 0054 CLAY GRVL 0070
MARKHAM TOWN (MARKHA CON 05 020	17 633130 4860944 W	2004/02 5459	5.90	FR 0141	150///:	DO		6927778 (Z05072) A004963	BRWN SAND STNS SOFT 0025 GREY GRVL FSND LOOS 0080 GREY FSND SILT LOOS 0130 GREY CLAY SOFT STNY 0141 GREY GRVL FSND LOOS 0144
MARKHAM TOWN (MARKHA CON 05 020	17 633265 4860995 W	2004/04 5459				NU		6927780 (Z05044) A004922 A	
MARKHAM TOWN (MARKHA CON 05 020	17 633290 4861003 W	2004/04 5459				NU		6927781 (Z05043) A004921 A	
MARKHAM TOWN (MARKHA CON 05 020	17 633229 4860973 W	1964/08 3519	5	FR 0002	40/50/4/8:0	DO		6903566 ()	LOAM 0002 HPAN 0110
MARKHAM TOWN (MARKHA CON 05 020	17 633295 4860863 W	1973/07 5459						6911559 ()	BRWN CLAY 0020 CLAY GRVL 0045 BLUE CLAY 0130 HPAN 0145 CLAY SILT GRVL 0155 CLAY SHLE 0160 BLUE SHLE 0200
MARKHAM TOWN (MARKHA CON 05 020	17 633135 4861123 W	1976/04 5459	6	FR 0125	40/125/12/:	DO	0127 6	6913631 ()	BRWN CLAY 0016 BLUE CLAY STNS 0114 BLUE CLAY FSND 0125 BLUE MSND 0134
MARKHAM TOWN (MARKHA CON 05 020	17 633264 4861241 W	1975/01 5459	6	FR 0160	20/140/10/3:30	DO	0165 3	6912760 ()	GREY CLAY STNS 0040 BLUE CLAY 0045 BLUE CLAY GRVL 0055 BLUE CLAY 0160 BLUE FSND 0168

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 05 020	17 633472 4861023 W	1974/06 5459	6	FR 0146	46/140/5/4:0	DO	0148 4	6912364 ()	PRDG 0032 BLUE CLAY STNS 0076 BLUE CLAY 0146 BLUE MSND 0152
MARKHAM TOWN (MARKHA CON 05 020	17 633217 4860916 W	1974/05 5459	6	FR 0127	32/125/5/2:0	DO	0128 4	6912318 ()	BRWN CLAY 0018 BLUE CLAY SAND STNS 0122 SAND 0127 SAND 0132
MARKHAM TOWN (MARKHA CON 05 020	17 633175 4860843 W	1982/06 2407	6	FR 0051	6/30/4/10:0	DO		6916470 ()	BLUE HPAN STNS SAND 0051
MARKHAM TOWN (MARKHA CON 05 020	17 633195 4861223 W	1973/09 5459	6	FR 0074	15/70/8/4:0	DO		6911860 ()	CLAY SAND 0020 CLAY STNS 0028 GRVL 0035 BLUE CLAY 0070 CLAY 0077
MARKHAM TOWN (MARKHA CON 05 020	17 633215 4861003 W	1968/03 4102	30	FR 0012	12//5/:	DO		6908773 ()	BRWN CLAY 0012 BRWN CLAY MSND 0015 BLUE CLAY 0040
MARKHAM TOWN (MARKHA CON 05 020	17 633175 4862023 W	1984/10 1413	6	FR 0137	36/60/16/3:30	DO	0131 6	6917251 ()	BRWN CLAY STNS HARD 0018 GREY CLAY STNS HARD 0090 GREY SILT SOFT 0092 BLUE CLAY DNSE 0110 GREY SILT SOFT 0120 GREY CSND CLN 0137
MARKHAM TOWN (MARKHA CON 05 020	17 633315 4861213 W	1970/11 3903	6	UK 0138	30/90/8/4:0	DO	0138 4	6910100 ()	BLCK CLAY MSND STNS 0006 YLLW CLAY STNS 0021 BLUE CLAY STNS 0065 STNS MSND 0067 BLUE CLAY SILT STNS 0115 GREY MSND GRVL 0142
MARKHAM TOWN (MARKHA CON 05 020	17 633255 4860863 W	1973/07 5459	6	FR 0127	32/80/15/3:0	DO	0130 3	6911557 ()	BRWN CLAY 0018 BLUE CLAY STNS 0127 CSND 0130
MARKHAM TOWN (MARKHA CON 05 020	17 633425 4861238 W	1990/12 5459	6			NU		6921413 (85034) A	LOAM 0002 BRWN CLAY STNY HARD 0012 GREY CLAY STNY HARD 0330
MARKHAM TOWN (MARKHA CON 05 020	17 633275 4861243 W	1972/05 5459	30	FR 0005	5///:	DO		6911441 ()	LOAM 0002 GRVL 0010 SAND STNS GRVL 0014
MARKHAM TOWN (MARKHA CON 05 020	17 633205 4861223 W	1973/05 5459	30	UK 0010	5///:	DO		6911440 ()	GRVL 0010 GRVL 0015 CSND 0017
MARKHAM TOWN (MARKHA CON 05 020	17 633140 4861013 W	1971/08 3903	6	UK 0128	40/60/8/8:0	DO	0132 3	6910415 ()	BRWN CLAY STNS 0021 BLUE CLAY STNS 0048 BLUE CLAY STNS 0128 GREY MSND GRVL 0135
MARKHAM TOWN (MARKHA CON 05 020	17 633264 4861034 W	1989/04 1591	6 6	FR 0180	42/115/5/2:0	DO		6920379 (58510)	GREY SAND 0015 GREY SILT 0130 GREY SAND 0145 GREY SILT 0180 GREY CGVL SLTY 0190 GREY SHLE 0300
MARKHAM TOWN (MARKHA CON 05 020	17 633455 4861223 W	1991/03 5459	6	FR 0158	///3:0	DO	0158 6	6921420 (85054)	BRWN CLAY SNDY 0014 GREY CLAY SAND STNS 0067 GREY CLAY SILT 0113 GREY SAND STNS 0119 GREY CLAY SILT 0147 GREY CLAY SAND STNS 0158 GREY SAND FSND 0164 GREY CLAY SAND STNS 0168 GREY CLAY SILT 0175
MARKHAM TOWN (MARKHA CON 05 020	17 633235 4860823 W	1973/07 5459	6	FR 0154	20/135/10/2:30	DO	0155 8	6911526 ()	BRWN CLAY 0022 BLUE CLAY 0154 FSND 0163
MARKHAM TOWN (MARKHA CON 05 020	17 633195 4861023 W	1983/05 5459	6	FR 0217	35/217/10/2:0	DO	0217 3	6917027 ()	BRWN CLAY 0005 BLUE CLAY STNS 0093 BLUE CLAY SILT 0111 GREY SAND STNS SILT 0137 BLUE CLAY SILT 0184 GREY SAND SILT 0205 WHIT CLAY STNS 0209 GREY SAND STNS CLN 0221
MARKHAM TOWN (MARKHA CON 05 021	17 633525 4861453 W	1971/02 1413						6910254 ()	BRWN SILT MSND STNS 0012 GREY SILT MSND CLAY 0080 GREY FSND SILT 0110 GREY MSND SILT 0132 GREY MSND SILT GRVL 0142 GREY MSND GRVL 0156 GREY CLAY SILT STNS 0195 GREY CLAY 0204 GREY CLAY SILT STNS 0212 GREY SHLE 0247

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 05 021	17 632824 4862520 W	2013/07 5459	2			NU		7206236 (Z168259) A	
MARKHAM TOWN (MARKHA CON 05 022	17 633294 4862156 W	1999/07 5459	6	FR 0334	-56/14/18/1:		0340 8	6924993 (195530)	BRWN CLAY STNS 0012 GREY CLAY STNS 0048 GREY CLAY SOFT 0070 GREY SAND CLAY 0090 GREY SAND GRVL 0095 GREY CLAY SAND 0116 GREY SAND GRVL 0121 BLUE CLAY SOFT 0139 GREY CLAY STNS 0221 GREY SAND 0228 GREY CLAY 0301 GREY SILT 0322 GREY CLAY 0340 GREY GRVL CMTD 0350 GREY ROCK 0350
MARKHAM TOWN (MARKHA CON 05 022	17 633345 4862164 W	1999/08 5459						6924962 (195532)	BRWN CLAY STNS 0014 GREY CLAY STNS 0058 BLUE CLAY SOFT 0076 GREY CSND 0080 GREY CLAY SAND 0093 GREY SAND CLAY 0113 GREY CLAY SOFT 0142 GREY SAND 0156 GREY CLAY STNS 0251 GREY CLAY SOFT 0303 GREY SILT 0318 GREY CSND 0324 GREY CLAY SAND 0340 GREY SAND CLAY 0349 GREY CSND 0355 BLCK SHLE 0361
MARKHAM TOWN (MARKHA CON 05 023	17 632931 4862070 W	2009/06 6809	2			MT	0025 5	7129457 (Z096744) A079818	BLCK LOAM 0001 BRWN CLAY SILT 0010 GREY SAND WBRG 0012 GREY SILT SAND BLDR 0030
MARKHAM TOWN (MARKHA CON 05 023	17 633315 4862177 W	2018/03 7221				NU		7309012 (Z272655) A	BRWN CLAY STNS SOFT 0011 GREY CLAY HARD 0073 GREY CLAY SILT SOFT 0096 GREY CLAY HARD 0220 GREY SAND FSND 0231 GREY CLAY HARD 0302 GREY CLAY SILT SOFT 0324 GREY CLAY TILL HARD 0358 GREY CLAY HARD 0418
MARKHAM TOWN (MARKHA CON 05 024	17 632984 4862809 W	1960/11 4623	10	FR 0030 FR 0156	3/95/27/50:0	DO	0172 6	6903577 ()	GRVL CLAY BLDR 0030 GRVL 0033 GRVL CLAY BLDR 0095 BLUE CLAY MSND 0156 MUCK MSND CLAY 0178 CSND 0184 CLAY STNS 0187
MARKHAM TOWN (MARKHA CON 05 024	17 632910 4862769 W	2012/09 5459	48					7190781 (Z159430) A	
MARKHAM TOWN (MARKHA CON 05 024	17 632781 4862677 W	1987/07 5459	8	FR 0154	/154/300/4:0	ST	0154 25	6919168 (09826)	BRWN CLAY SNDY 0007 GREY CLAY SNDS 0028 GREY CLAY SILT 0132 GREY CLAY SNDS 0146 GREY SAND CLN 0180
MARKHAM TOWN (MARKHA CON 05 025	17 632525 4863163 W	1988/10 3108	6	FR 0164	35//12/48:0	DO	0164 3	6919926 (26217)	LOAM 0003 BRWN CLAY 0007 SAND GRVL 0042 GRVL CLAY 0089 BLUE CLAY 0104 CLAY HPAN 0157 CLAY 0164 SAND 0167
MARKHAM VILLAGE 04 021	17 632866 4861176 W	2008/01 5459			///:			7102253 (Z75604) A063171 A	

TOWNSHIP CON LOT UTM DATE CNTR CASING DIA WATER PUMP TEST WELL USE SCREEN WELL FORMATION

Notes:
UTM: UTM in Zone, Easting, Northing and Datum is NAD83; L: UTM estimated from Centroid of Lot; W: UTM not from Lot Centroid
DATE CNTR: Date Work Completedand Well Contractor Licence Number
CASING DIA: .Casing diameter in inches
WATER: Unit of Depth in Fee. See Table 4 for Meaning of Code

PUMP TEST: Static Water Level in Feet / Water Level After Pumping in Feet / Pump Test Rate in GPM / Pump Test Duration in Hour : Minutes
WELL USE: See Table 3 for Meaning of Code
SCREEN: Screen Depth and Length in feet
WELL: WEL (AUDIT #) Well Tag . A: Abandonment; P: Partial Data Entry Only
FORMATION: See Table 1 and 2 for Meaning of Code

1. Core Material and Descriptive terms

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
BLDR	BOULDERS	FCRD	FRACTURED	IRFM	IRON FORMATION	PORS	POROUS	SOFT	SOFT
BSLT	BASALT	FGRD	FINE-GRAINED	LIMY	LIMY	PRDG	PREVIOUSLY DUG	SPST	SOAPSTONE
CGRD	COARSE-GRAINED	FGVL	FINE GRAVEL	LMSN	LIMESTONE	PRDR	PREV. DRILLED	STKY	STICKY
CGVL	COARSE GRAVEL	FILL	FILL	LOAM	TOPSOIL	QRTZ	QUARTZITE	STNS	STONES
CHRT	CHERT	FLDS	FELDSPAR	LOOS	LOOSE	QSND	QUICKSAND	STNY	STONEY
CLAY	CLAY	FLNT	FLINT	LTCL	LIGHT-COLOURED	QTZ	QUARTZ	THIK	THICK
CLN	CLEAN	FOSS	FOSILIFEROUS	LYRD	LAYERED	ROCK	ROCK	THIN	THIN
CLYY	CLAYEY	FSND	FINE SAND	MARL	MARL	SAND	SAND	TILL	TILL
CMTD	CEMENTED	GNIS	GNEISS	MGRD	MEDIUM-GRAINED	SHLE	SHALE	UNKN	UNKNOWN TYPE
CONG	CONGLOMERATE	GRNT	GRANITE	MGVL	MEDIUM GRAVEL	SHLY	SHALY	VERY	VERY
CRYS	CRYSTALLINE	GRSN	GREENSTONE	MRBL	MARBLE	SHRP	SHARP	WBRG	WATER-BEARING
CSND	COARSE SAND	GRVL	GRAVEL	MSND	MEDIUM SAND	SHST	SCHIST	WDFR	WOOD FRAGMENTS
DKCL	DARK-COLOURED	GRWK	GREYWACKE	MUCK	MUCK	SILT	SILT	WTHD	WEATHERED
DLMT	DOLOMITE	GVLY	GRAVELLY	OBDN	OVERBURDEN	SLTE	SLATE		
DNSE	DENSE	GYPS	GYPSUM	PCKD	PACKED	SLTY	SILTY		
DRTY	DIRTY	HARD	HARD	PEAT	PEAT	SNDS	SANDSTONE		
DRY	DRY	HPAN	HARDPAN	PGVL	PEA GRAVEL	SNDY	SANDYOAPSTONE		

2. Core Color

Code	Description
WHIT	WHITE
GREY	GREY
BLUE	BLUE
GREN	GREEN
YLLW	YELLOW
BRWN	BROWN
RED	RED
BLCK	BLACK
BLGY	BLUE-GREY

3. Well Use

Code	Description	Code	Description
DO	Domestic	OT	Other
ST	Livestock	TH	Test Hole
IR	Irrigation	DE	Dewatering
IN	Industrial	MO	Monitoring
CO	Commercial	MT	Monitoring TestHole
MN	Municipal		
PS	Public		
AC	Cooling And A/C		
NU	Not Used		

4. Water Detail

Code	Description	Code	Description
FR	Fresh	GS	Gas
SA	Salty	IR	Iron
SU	Sulphur		
MN	Mineral		
UK	Unknown		

Water Well Records

Monday, November 08, 2021
1:44:42 PM

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA	17 635278 4862040 W	2015/05 7383	2			TH	0010 10	7261032 (Z208400) A179051	
MARKHAM TOWN (MARKHA	17 635064 4861902 W	2006/05 6032	1.97			NU	0010 10	6930839 (Z05116) A005200	BRWN LOAM CLAY 0008 GREY TILL GRVL SAND 0020
MARKHAM TOWN (MARKHA	17 634793 4862858 W	2015/03 6809						7260145 (C29948) A177533 P	
MARKHAM TOWN (MARKHA	17 634944 4862916 W	2014/09 7215						7250028 (C26805) A169148 P	
MARKHAM TOWN (MARKHA	17 635099 4862019 W	2013/11 7230						7218632 (C24338) A153753 P	
MARKHAM TOWN (MARKHA	17 635151 4863208 W	2013/09 6946						7209255 (C22383) A130259 P	
MARKHAM TOWN (MARKHA	17 635020 4861722 W	2008/01 5459			///:			7103270 (Z75616) A063138 A	
MARKHAM TOWN (MARKHA	17 634311 4864104 W	2012/12 5459	2					7193828 (Z159485) _NO_TAG A	
MARKHAM TOWN (MARKHA	17 634799 4861625 W	2008/02 5459			///:			7103271 (Z75617) A063139 A	
MARKHAM TOWN (MARKHA	17 634900 4862595 W	2008/06 6809	2			MO		7111114 (Z80083) A066770	BRWN LOAM 0002 BRWN SAND SILT 0017 GREY SAND WBRG 0025
MARKHAM TOWN (MARKHA 05 023	17 634733 4863076 W	2005/06 1663	6.21	FR 0102	85/122/17/1:0	DO	0171 5	6929295 (Z24753) A013038	BRWN CLAY 0016 BRWN CLAY GRVL STNS 0098 GREY SAND GRVL 0101 GREY CLAY GRVL 0115 GREY FSND 0130 GREY SAND GRVL 0138 GREY CLAY STNS 0168 GREY FSND 0177 GREY CLAY SILT 0200
MARKHAM TOWN (MARKHA 06 025	17 634705 4863735 W	2005/05 1413	6.25	FR 0043	10/33/16/1:	DO	0042 3	6929074 (Z27529) A022617	BRWN CLAY SOFT 0010 BRWN SAND CLAY LYRD 0035 BRWN SAND 0045
MARKHAM TOWN (MARKHA CON 05 019	17 635015 4861470 W	1996/09 3108						6923713 (166663) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 05 019	17 634979 4861462 W	1996/09 3108						6923715 (166661) A	
MARKHAM TOWN (MARKHA CON 05 020	17 634965 4861823 W	1999/02 5459	6 6	FR 0146	12/160/2/5:30	DO		6924816 (195444)	BRWN CLAY 0020 GREY CLAY STNS 0048 GREY CLAY 0098 GREY CLAY SILT 0099 GREN CLAY 0116 GREY CLAY 0140 GREY SHLE 0175
MARKHAM TOWN (MARKHA CON 05 020	17 635069 4861879 W	1999/11 5019						6925330 (212825) A	
MARKHAM TOWN (MARKHA CON 05 020	17 635069 4861879 W	1999/11 5019						6925331 (212824) A	
MARKHAM TOWN (MARKHA CON 05 020	17 634935 4861823 W	1979/11 1350	6	FR 0065	5/35/10/2:0	DO		6915314 ()	GREY CLAY 0018 GREY SILT CLAY STNS 0065 GREY GRVL HPAN 0080
MARKHAM TOWN (MARKHA CON 05 020	17 634995 4861743 W	1977/07 3109	30 30	FR 0016	12///:	DO		6914160 ()	LOAM 0002 BRWN CLAY STNY 0016 SAND GRVL 0036
MARKHAM TOWN (MARKHA CON 05 021	17 634870 4862249 W	1996/06 3108	6 5	FR 0110	31/72/90/1:30	IR	0116 15	6923625 (156508)	BRWN CLAY SAND GRVL 0032 BLUE CLAY GRVL 0110 BLUE SAND 0132
MARKHAM TOWN (MARKHA CON 05 021	17 634820 4861858 W	1993/03 3108	8 6	FR 0075	/75/80/12:30	IR	0077 15	6922233 (095350)	CLAY STNS FILL 0005 BLUE CLAY 0010 SAND 0020 SAND CLAY 0023 BLUE CLAY GRVL 0040 BLUE CLAY 0049 SAND GRVL 0092 SAND GRVL CLAY 0097 BLUE CLAY 0105
MARKHAM TOWN (MARKHA CON 05 021	17 634901 4862010 W	1995/12 5459	24			NU		6923480 (166860) A	
MARKHAM TOWN (MARKHA CON 05 021	17 634697 4861832 W	2016/06 7221	8			IR		7266025 (Z230666) A173475	
MARKHAM TOWN (MARKHA CON 05 021	17 634929 4861986 W	1994/08 3108	6	FR 0079	6/78/5/6:0	DO	0079 4	6922816 (143817)	LOAM 0003 BRWN CLAY GRVL 0034 BLUE CLAY 0079 SAND 0083 BLUE CLAY SAND 0085 BLUE CLAY 0195 BLUE SAND 0200 BLUE CLAY SAND 0226 BLUE CLAY HARD 0233 BLUE SHLE 0235
MARKHAM TOWN (MARKHA CON 05 021	17 634992 4861883 W	2010/02 1663	2			MO	0037 5	7141955 (Z110272) A095582	BRWN SAND GRVL FILL 0008 GREY CLAY 0010 YLLW CLAY SILT 0012 BRWN CLAY GRVL 0015 GREY SAND GRVL STNS 0018 GREY CLAY SAND LYRD 0023 GREY CLAY SILT SNDY 0042
MARKHAM TOWN (MARKHA CON 05 022	17 634680 4862296 W	1965/12 4813	7	FR 0138	50/70/20/4:0	ST DO	0142 8	6903576 ()	BRWN CLAY 0010 GREY CLAY 0036 BLDR CLAY 0100 BLUE CLAY 0138 GRVL 0150
MARKHAM TOWN (MARKHA CON 05 022	17 634750 4862522 W	1962/11 5420	34	FR 0009	10///:	ST DO		6903575 ()	LOAM 0001 YLLW CLAY 0008 GRVL 0025
MARKHAM TOWN (MARKHA CON 05 024	17 634752 4863093 W	1960/11 1413	5	FR 0100	60/70/8/3:0	ST DO		6903578 ()	BRWN CLAY 0015 BLUE CLAY STNS 0100 GRVL 0101
MARKHAM TOWN (MARKHA CON 05 024	17 634675 4863183 W	1968/09 5420						6908817 () A	LOAM 0001 BRWN CLAY 0015 BLUE CLAY 0055
MARKHAM TOWN (MARKHA CON 05 024	17 634750 4863135 W	5459						7340440 (Z304006) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 05 026	17 634415 4863843 W	1983/08 4738						6916794 () A	BRWN CLAY SAND SOFT 0030 BRWN SAND LOOS 0032 GREY CLAY STNS MGRD 0126 GREY GRVL SAND LOOS 0128 GREY CLAY STNS MGRD 0277
MARKHAM TOWN (MARKHA CON 05 026	17 634335 4863823 W	1977/12 3109	30 24	FR 0033	10///12:0	DO		6914375 ()	LOAM 0002 BRWN CLAY SLTY 0010 FSND 0015 BLUE CLAY STNY 0032 GRVL 0035
MARKHAM TOWN (MARKHA CON 05 026	17 634355 4863803 W	1980/10 5459	6	FR 0119	10/119/40/2:0	DO	0119 3	6915745 ()	BRWN CLAY STNS 0006 BRWN CLAY SNDY 0022 BRWN CLAY STNS 0027 GREY SAND STNS 0030 BLUE CLAY STNS 0038 GREY SAND STNS 0049 BLUE CLAY SNDY 0098 BLUE CLAY SILT 0117 GREY SAND STNS 0124
MARKHAM TOWN (MARKHA CON 05 026	17 634415 4863843 W	1983/08 4738	6		0/20/10/2:0	DO	0101 3	6916795 ()	BRWN CLAY STNS SOFT 0011 BRWN SAND LOOS 0013 GREY CLAY SAND SOFT 0036 GREY GRVL CLAY LOOS 0038 GREY CLAY STNS HARD 0101 GREY SAND GRVL LOOS 0104
MARKHAM TOWN (MARKHA CON 05 026	17 634422 4863823 W	1988/05 5459	6	FR 0119	15/119/7/6:0	DO	0119 6	6919603 (NA)	BRWN CLAY 0013 GRVL 0020 SAND 0032 GREY CLAY 0098 GREY CLAY SAND 0113 GREY CLAY 0119 GREY CSND 0125
MARKHAM TOWN (MARKHA CON 05 026	17 634197 4863774 W	1992/08 5459	6	FR 0090	/20/20/2:30	DO	0090 3	6922053 (116141)	BRWN STNS SAND CLAY 0010 GREY CLAY STNS HARD 0062 GREY CLAY 0070 GREY CLAY SOFT 0090 GREY SAND MSND 0093
MARKHAM TOWN (MARKHA CON 05 026	17 634467 4863868 W	1993/10 5459						6922426 (58256) A	
MARKHAM TOWN (MARKHA CON 05 027	17 634455 4864343 W	1981/05 5459	6	FR 0125	60/120/15/4:0	DO	0123 3	6915993 ()	LOAM 0002 BRWN CLAY 0006 BLUE CLAY 0012 CLAY STNS 0028 PGVL 0033 CLAY SAND 0090 BLUE CLAY SOFT 0095 CLAY STNS 0117 GRVL 0125
MARKHAM TOWN (MARKHA CON 06 018	17 635267 4861523 W	1997/11 1663						6924236 (186427) A	
MARKHAM TOWN (MARKHA CON 06 018	17 635267 4861523 W	1997/11 1663						6924243 (186426) A	
MARKHAM TOWN (MARKHA CON 06 018	17 635268 4861523 W	1997/11 1663						6924244 (186424) A	
MARKHAM TOWN (MARKHA CON 06 018	17 635268 4861523 W	1997/11 1663						6924245 (186425) A	
MARKHAM TOWN (MARKHA CON 06 020	17 635080 4861866 W	2013/07 5459				NU		7206235 (Z168251) A	
MARKHAM TOWN (MARKHA CON 06 020	17 635385 4861780 W	1962/09 5420	34	FR 0020	18///:	ST DO		6903815 ()	LOAM 0001 YLLW CLAY STNS 0012 CLAY MSND 0020 GRVL 0029
MARKHAM TOWN (MARKHA CON 06 020	17 635079 4861866 W	2009/11 5459	0.79					7136856 (Z75633) A061041 A	
MARKHAM TOWN (MARKHA CON 06 021	17 635069 4862056 W	1975/10 5459	6	UK 0014	14/30/10/3:0	DO	0026 4	6912949 ()	BRWN CLAY 0014 BRWN GRVL SAND 0030
MARKHAM TOWN (MARKHA CON 06 021	17 635262 4861993 W	1999/12 1663				NU		6925247 (206298) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 06 021	17 635231 4862020 W	1961/11 5420	34	FR 0012	3//5/:	DO		6903817 ()	LOAM 0001 YLLW CLAY 0007 CLAY GRVL 0012 GRVL 0016
MARKHAM TOWN (MARKHA CON 06 021	17 635308 4862039 W	1961/11 5420	34	FR 0020	10//2/:	DO		6903818 ()	LOAM 0001 YLLW CLAY 0012 BLUE CLAY 0020 CLAY MSND 0021
MARKHAM TOWN (MARKHA CON 06 021	17 635116 4862128 W	1962/06 5420	34	FR 0010	10///:	ST DO		6903819 ()	LOAM 0001 YLLW CLAY MSND 0005 GRVL 0012 CSND 0026
MARKHAM TOWN (MARKHA CON 06 021	17 635102 4861955 W	1963/06 5420	34	FR 0022	16///:	DO		6903820 ()	LOAM 0001 BRWN CLAY 0012 BLUE CLAY STNS 0033
MARKHAM TOWN (MARKHA CON 06 021	17 635215 4861963 W	1973/08 5459	30	FR 0018	14///:	DO		6911865 ()	BLCK LOAM 0002 BRWN CLAY STNS 0018 BRWN GRVL 0022 BLUE CLAY 0026
MARKHAM TOWN (MARKHA CON 06 021	17 635360 4862164 W	1975/10 5459						6912958 () A	PRDG 0028 BLUE CLAY STNS 0050 BLUE CLAY 0140 BLUE CLAY 0189 BLUE CLAY SHLE STNS 0200
MARKHAM TOWN (MARKHA CON 06 021	17 634746 4862214 W	1994/06 3108	8	FR 0100	6/80/60/7:0	PS	0105 15	6922691 (143797)	BRWN CLAY 0007 BRWN CLAY GRVL 0015 BRWN CLAY SAND 0020 BLUE CLAY SAND 0044 BLUE CLAY HARD 0064 GRVL 0070 BLUE CLAY GRVL 0075 SILT 0100 SAND 0120 HPAN 0127
MARKHAM TOWN (MARKHA CON 06 022	17 635044 4862503 W	2000/01 5459	6	FR 0139	55/75/20/1:30	DO	0145 3	6925228 (211643)	BLCK LOAM 0002 BRWN CLAY STNS SAND 0017 GREY CLAY STNS HARD 0112 GREY CLAY SLTY 0139 GREY SAND CGVL 0148
MARKHAM TOWN (MARKHA CON 06 023	17 634993 4862959 W	1964/02 3108	7	FR 0140	55/115/7/2:30	ST DO	0143 4	6903828 ()	LOAM 0001 CLAY STNS 0035 CLAY STNS CLAY 0090 BLUE CLAY 0130 BLUE CLAY MSND 0135 FSND 0140 MSND FSND 0147
MARKHAM TOWN (MARKHA CON 06 023	17 634822 4862966 W	1963/01 3108	7	FR 0180	45/110/10/12:0	ST DO	0181 4	6903827 ()	GRVL CLAY 0004 BRWN CLAY STNS 0036 BRWN MSND 0040 BRWN CLAY 0047 BRWN MSND 0053 BLUE CLAY 0080 GREY CLAY STNS 0116 BLUE CLAY 0145 BLUE CLAY STNS 0180 BLUE MSND 0185
MARKHAM TOWN (MARKHA CON 06 024	17 634765 4863358 W	1962/10 5420	4	FR 0189	34/50/8/6:0	ST DO		6903829 ()	PRDG 0024 CLAY MSND 0053 CLAY STNS 0112 STNS CLAY STNS 0179 MSND GRVL 0183 CLAY MSND 0188 GRVL 0189
MARKHAM TOWN (MARKHA CON 06 024	17 634769 4863182 W	2012/12 5459	2					7193824 (Z159486) A	
MARKHAM TOWN (MARKHA CON 06 025	17 634717 4863781 W	1961/12 3108	4	FR 0075	30/60/4/2:0	ST DO	0078 4	6903831 ()	PRDG 0027 BLUE CLAY 0040 CLAY MSND 0075 MSND 0090
MARKHAM TOWN (MARKHA CON 06 025	17 634678 4863860 W	1959/10 1413	6	FR 0043	23/26/3/:	DO		6903830 ()	BLUE CLAY 0015 MSND GRVL 0023 MSND 0043
MARKHAM TOWN (MARKHA CON 06 025	17 634641 4863734 W	1988/02 3108	6	FR 0175	27/100/15/2:0	DO	0175 3	6919388 (13897)	LOAM 0002 BRWN CLAY SAND GRVL 0014 BRWN SAND 0038 BLUE CLAY SAND GRVL 0071 BLUE CLAY 0089 BLUE CLAY SNDY 0129 BLUE CLAY GRVL 0175 BLUE SAND 0178
MARKHAM TOWN (MARKHA CON 06 025	17 634674 4863696 W	2012/04 1413	6.25	FR 0128	22/110/50/1:	DO	0125 3	7181506 (Z147583) A124868	BRWN CLAY HARD 0017 BRWN SAND SILT PCKD 0034 GREY CLAY STNS SOFT 0062 GREY CLAY STNS HARD 0110 GREY CLAY DNSE 0119 GREY SAND GRVL CGRD 0128
MARKHAM TOWN (MARKHA CON 06 025	17 634612 4863825 W	2009/10 5459	2			MO	0020 10	7134480 (Z101430) A064966 A	PRDR 0030

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
MARKHAM TOWN (MARKHA CON 06 026	17 634562 4864306 W	1959/11 1413	5	FR 0038	15/20/10/1:0	DO		6903834 ()	PRDG 0018 CLAY SILT 0030 CSND GRVL 0038
MARKHAM TOWN (MARKHA CON 06 026	17 634628 4863952 W	1963/07 5420	34	FR 0025	25//5/:	DO		6903836 ()	LOAM 0001 YLLW CLAY 0010 FSND 0025 GRVL 0037
MARKHAM TOWN (MARKHA CON 06 026	17 634586 4864204 W	1997/11 1350	6	MN 0033	8/25/10/1:0	DO	0030 3	6924113 (181069)	BRWN CLAY BLDR HARD 0013 GREY CLAY SAND SOFT 0015 GREY CLAY 0030 GREY SAND GRVL 0036
MARKHAM TOWN (MARKHA CON 06 027	17 634608 4864080 W	2016/12 5459	6	FR 0112	-3/-15/10/1:	DO	0109 3	7279714 (Z210594) A102760	BRWN SAND SOFT 0010 GREY CLAY SOFT 0025 GREY GRVL SAND LOOS 0030 GREY CLAY SOFT 0105 BRWN SAND LOOS 0112
MARKHAM VILLAGE	17 634636 4863899 W	2006/10 5459	2.35	FR 0410	90/438/2/1:0	DO	0554 20	7040063 (Z56410) A050977	BLCK LOAM DNSE 0016 BRWN CLAY STNS SILT 0056 BRWN SAND GRVL LOOS 0128 GREY CLAY STNS SILT 0420 GREY CLAY STNS SOFT 0443 BRWN CLAY STNS SILT 0525 BRWN GRVL LOOS FSND 0581
WHITCHURCH-STOUFFVIL CON 06 001	17 634080 4863907 W	1987/11 3136	6	FR 0057	33/57/15/2:0	DO	0059 6	6919239 (NA)	BRWN CLAY STNS 0018 GREY CLAY GRVL STNS 0057 GREY GRVL 0065

TOWNSHIP	CON	LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION

Notes:
UTM: UTM in Zone, Easting, Northing and Datum is NAD83; L: UTM estimated from Centroid of Lot; W: UTM not from Lot Centroid
DATE CNTR: Date Work Completedand Well Contractor Licence Number
CASING DIA: .Casing diameter in inches
WATER: Unit of Depth in Fee. See Table 4 for Meaning of Code

PUMP TEST: Static Water Level in Feet / Water Level After Pumping in Feet / Pump Test Rate in GPM / Pump Test Duration in Hour : Minutes
WELL USE: See Table 3 for Meaning of Code
SCREEN: Screen Depth and Length in feet
WELL: WEL (AUDIT #) Well Tag . A: Abandonment; P: Partial Data Entry Only
FORMATION: See Table 1 and 2 for Meaning of Code

1. Core Material and Descriptive terms

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
BLDR	BOULDERS	FCRD	FRACTURED	IRFM	IRON FORMATION	PORS	POROUS	SOFT	SOFT
BSLT	BASALT	FGRD	FINE-GRAINED	LIMY	LIMY	PRDG	PREVIOUSLY DUG	SPST	SOAPSTONE
CGRD	COARSE-GRAINED	FGVL	FINE GRAVEL	LMSN	LIMESTONE	PRDR	PREV. DRILLED	STKY	STICKY
CGVL	COARSE GRAVEL	FILL	FILL	LOAM	TOPSOIL	QRTZ	QUARTZITE	STNS	STONES
CHRT	CHERT	FLDS	FELDSPAR	LOOS	LOOSE	QSND	QUICKSAND	STNY	STONEY
CLAY	CLAY	FLNT	FLINT	LTCL	LIGHT-COLOURED	QTZ	QUARTZ	THIK	THICK
CLN	CLEAN	FOSS	FOSILIFEROUS	LYRD	LAYERED	ROCK	ROCK	THIN	THIN
CLYY	CLAYEY	FSND	FINE SAND	MARL	MARL	SAND	SAND	TILL	TILL
CMTD	CEMENTED	GNIS	GNEISS	MGRD	MEDIUM-GRAINED	SHLE	SHALE	UNKN	UNKNOWN TYPE
CONG	CONGLOMERATE	GRNT	GRANITE	MGVL	MEDIUM GRAVEL	SHLY	SHALY	VERY	VERY
CRYS	CRYSTALLINE	GRSN	GREENSTONE	MRBL	MARBLE	SHRP	SHARP	WBRG	WATER-BEARING
CSND	COARSE SAND	GRVL	GRAVEL	MSND	MEDIUM SAND	SHST	SCHIST	WDFR	WOOD FRAGMENTS
DKCL	DARK-COLOURED	GRWK	GREYWACKE	MUCK	MUCK	SILT	SILT	WTHD	WEATHERED
DLMT	DOLOMITE	GVLY	GRAVELLY	OBDN	OVERBURDEN	SLTE	SLATE		
DNSE	DENSE	GYPS	GYPSUM	PCKD	PACKED	SLTY	SILTY		
DRTY	DIRTY	HARD	HARD	PEAT	PEAT	SNDS	SANDSTONE		
DRY	DRY	HPAN	HARDPAN	PGVL	PEA GRAVEL	SNDY	SANDYOAPSTONE		

2. Core Color

Code	Description
WHIT	WHITE
GREY	GREY
BLUE	BLUE
GREN	GREEN
YLLW	YELLOW
BRWN	BROWN
RED	RED
BLCK	BLACK
BLGY	BLUE-GREY

3. Well Use

Code	Description	Code	Description
DO	Domestic	OT	Other
ST	Livestock	TH	Test Hole
IR	Irrigation	DE	Dewatering
IN	Industrial	MO	Monitoring
CO	Commercial	MT	Monitoring TestHole
MN	Municipal		
PS	Public		
AC	Cooling And A/C		
NU	Not Used		

4. Water Detail

Code	Description	Code	Description
FR	Fresh	GS	Gas
SA	Salty	IR	Iron
SU	Sulphur		
MN	Mineral		
UK	Unknown		

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

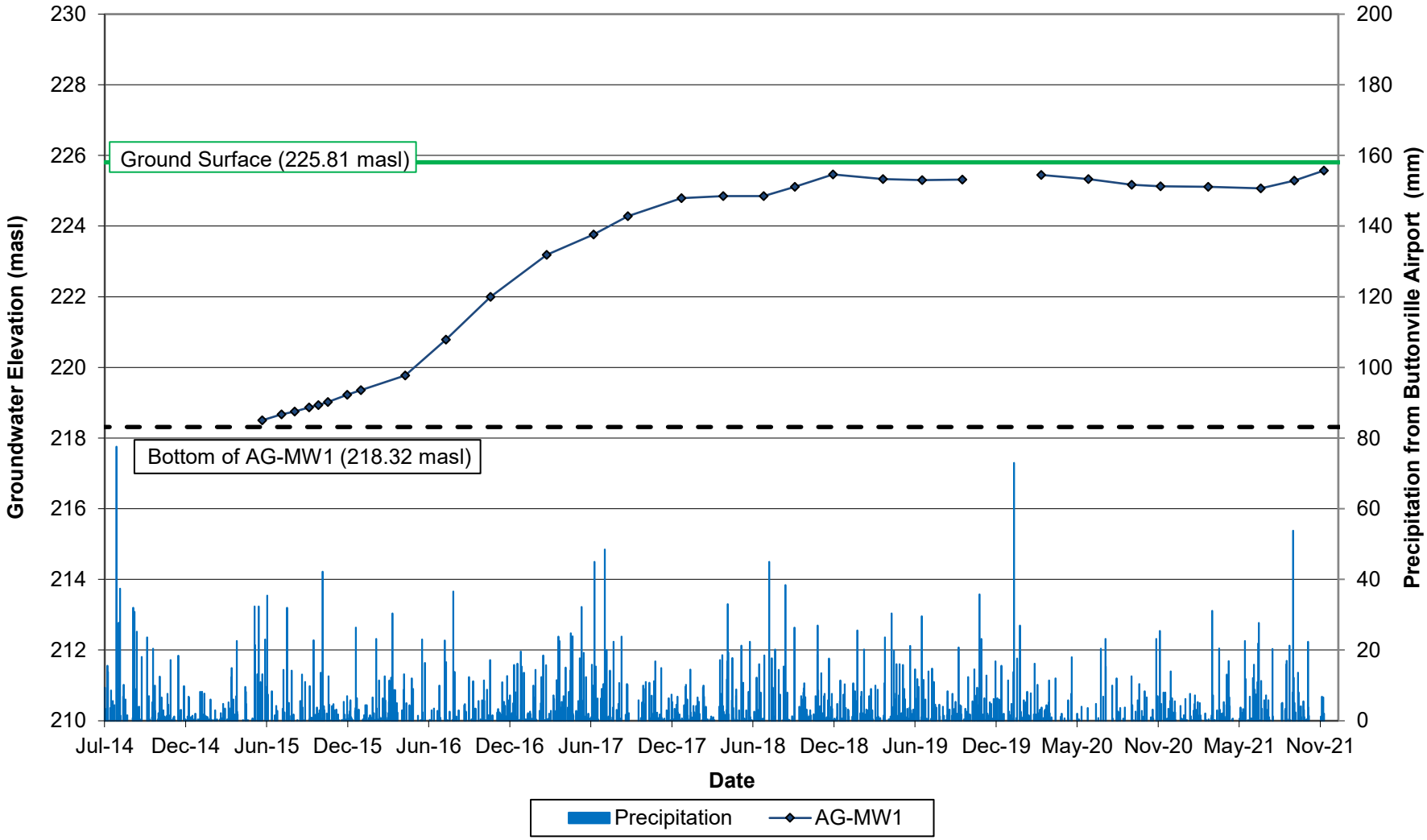
Appendix C

Hydrographs

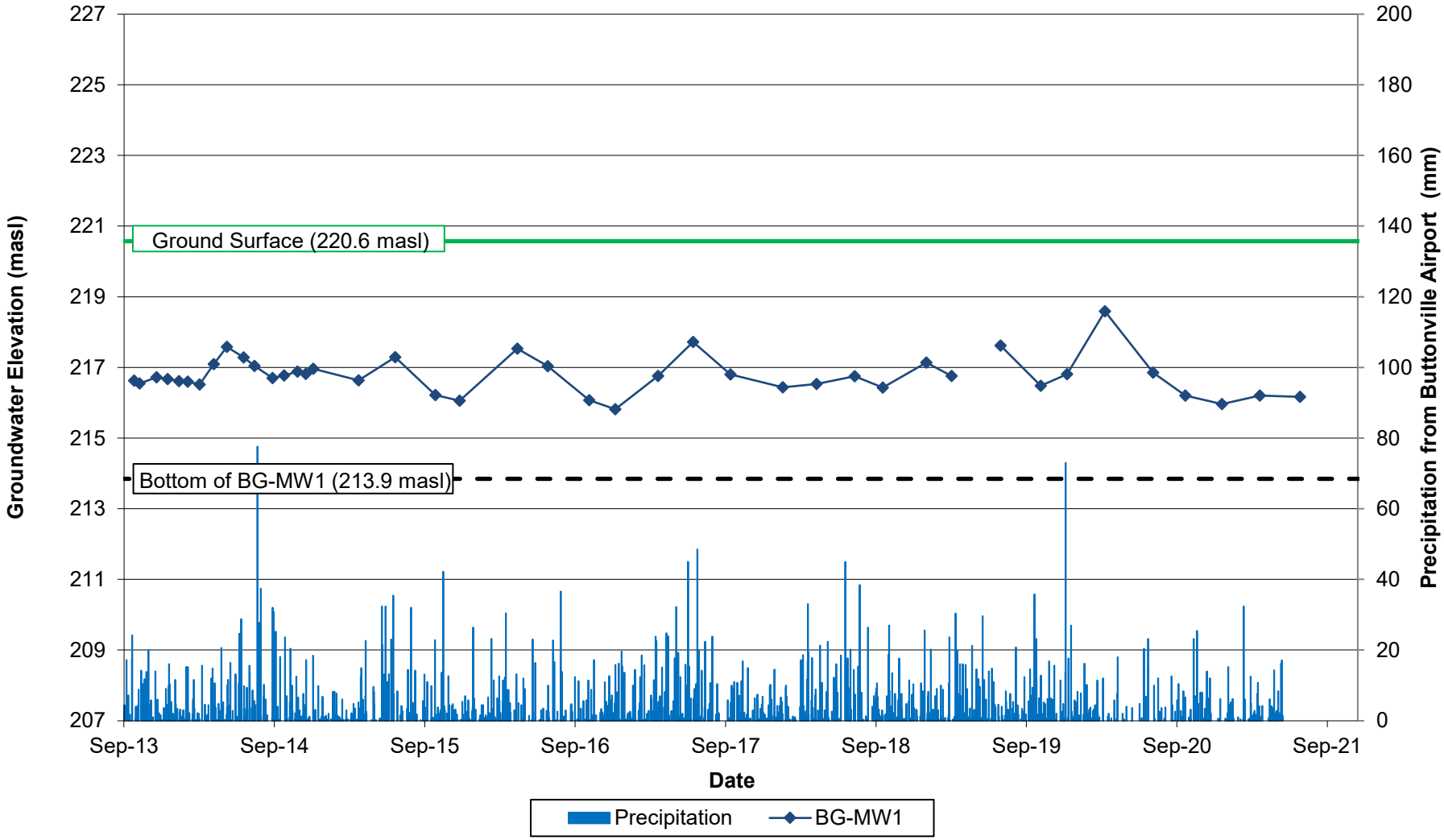
Table C-1: Groundwater Levels

			May 18 and May 20, 2021	
Monitoring Well	**Ground Elevation (masl)**	**Well Depth (mbgs)**	**Water Level (mbgs)**	**Water Elevation (masl)**
Warden Avenue				
S1	215.1	8.87	2.01	213.09
S3	218.9	8.95	3.3	215.6
S4	213.8	7.39	1.23	212.57
C4	221.3	8.85	2.49	218.81
S5	215.7	7.35	0.43	215.27
S8	225.4	8.92	0.6	224.8
S9	227.2	7.32	0.81	226.39
S11	230	6.71	3.03	226.97
BH21-1	216.45	17	0.6	215.85
BH21-2	220.8	6.7	4.7	216.1
BH21-3	220.82	7.3	4.5	216.3
Kennedy Road				
KS1	204	8.92	1.73	202.27
KS2	209.3	8.88	1.53	207.77
KS3	214.7	7.49	7	207.7
KS4	218.7	16.2	6.23	212.47
KS7	223	7.06	2.13	220.87
KS8	223.5	16.17	3.12	220.38
KS9	222.9	14.25	7.5	215.4
KS10	223.2	8.34	7.56	215.64
KS11	218.7	7.33	2.39	216.31

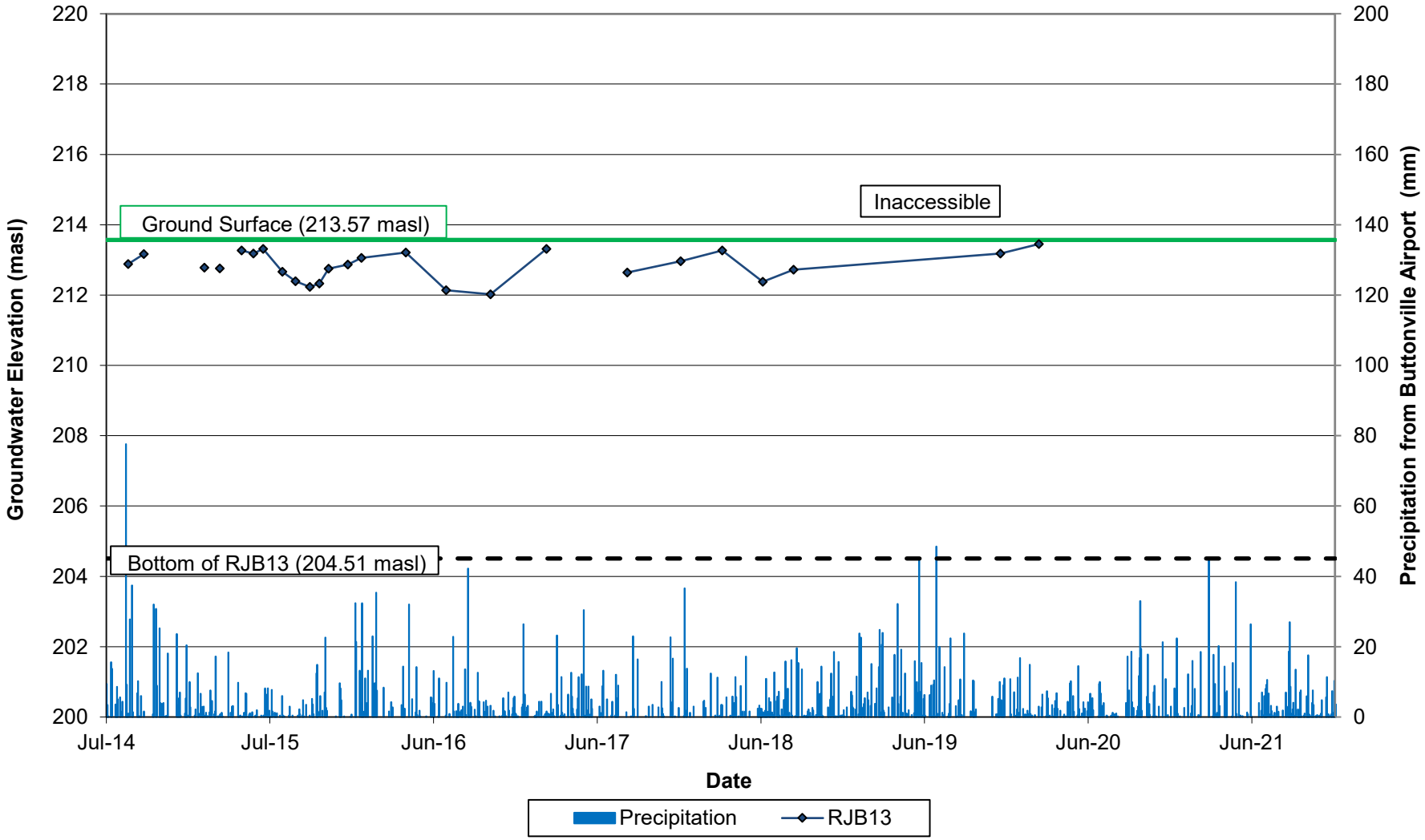
Groundwater Elevations
AG-MW1

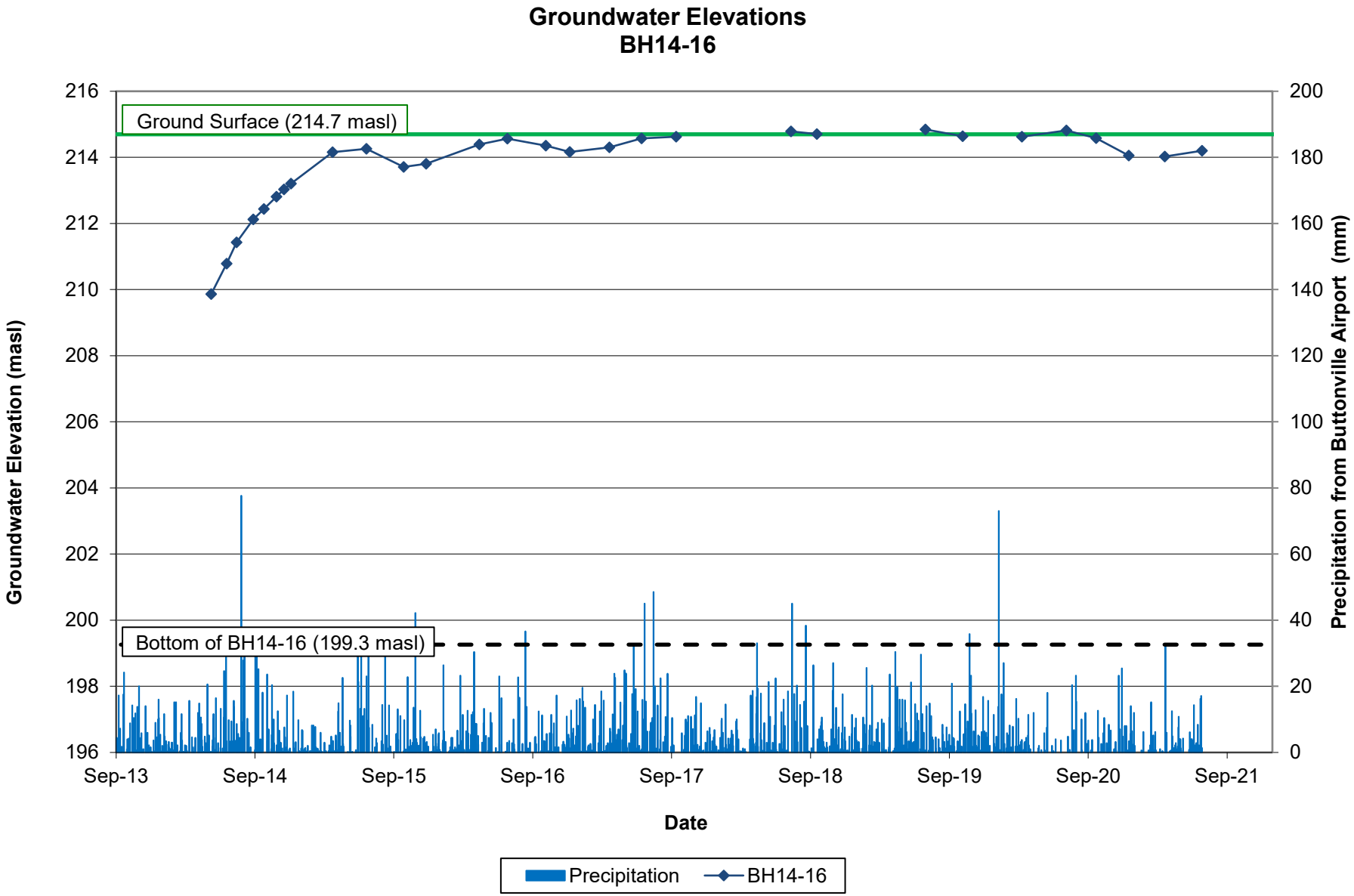


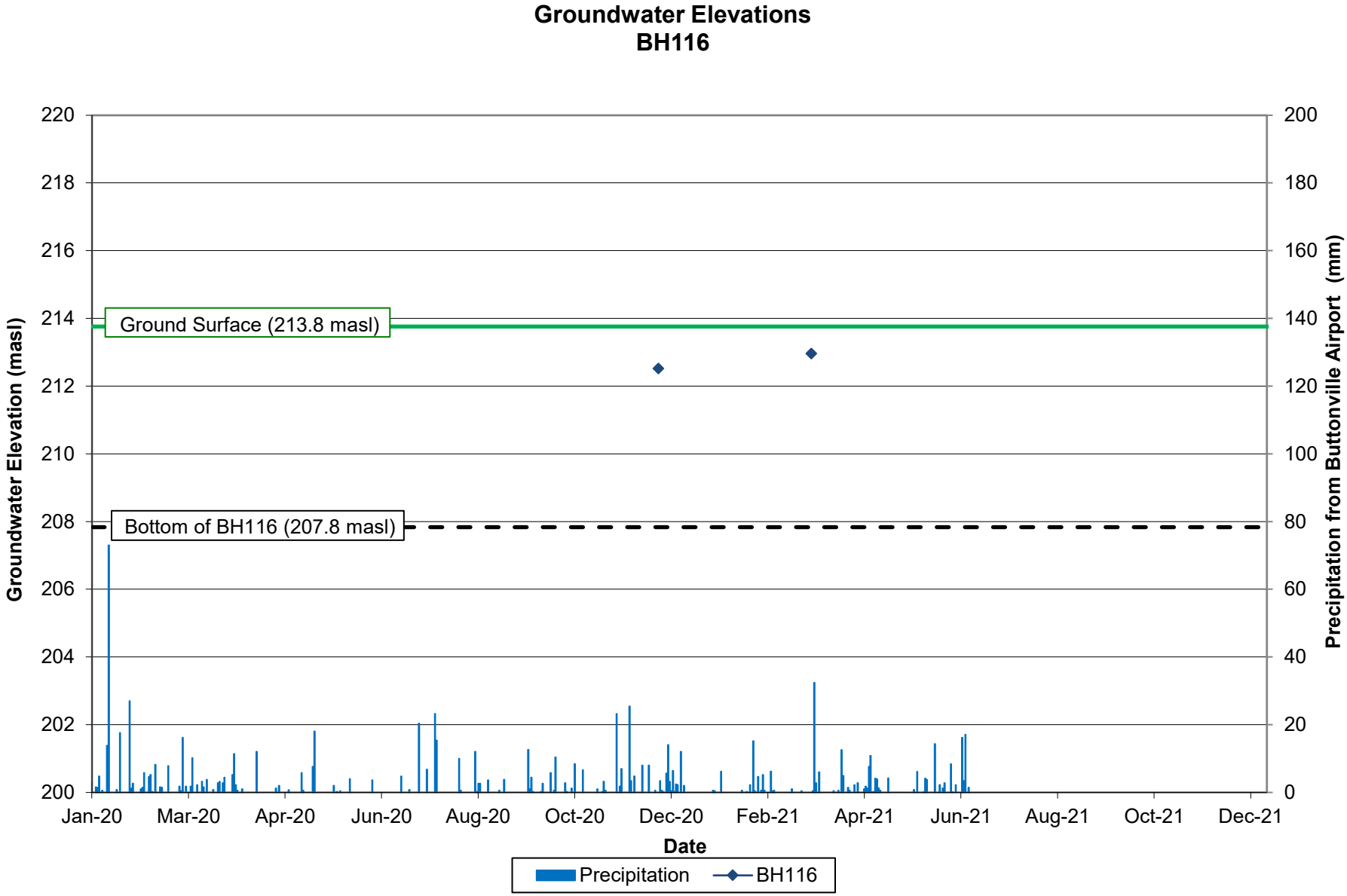
Groundwater Elevations
BG-MW1



Groundwater Elevations
RJB13




Groundwater Elevations
BH14-16
Ground Surface (214.7 masl)
Bottom of BH14-16 (199.3 masl)
Groundwater Elevation (masl)
Precipitation from Buttonville Airport (mm)
Date
Precipitation
BH14-16
216
214
212
210
208
206
204
202
200
198
196
200
180
160
140
120
100
80
60
40
20
0
Sep-13
Sep-14
Sep-15
Sep-16
Sep-17
Sep-18
Sep-19
Sep-20
Sep-21



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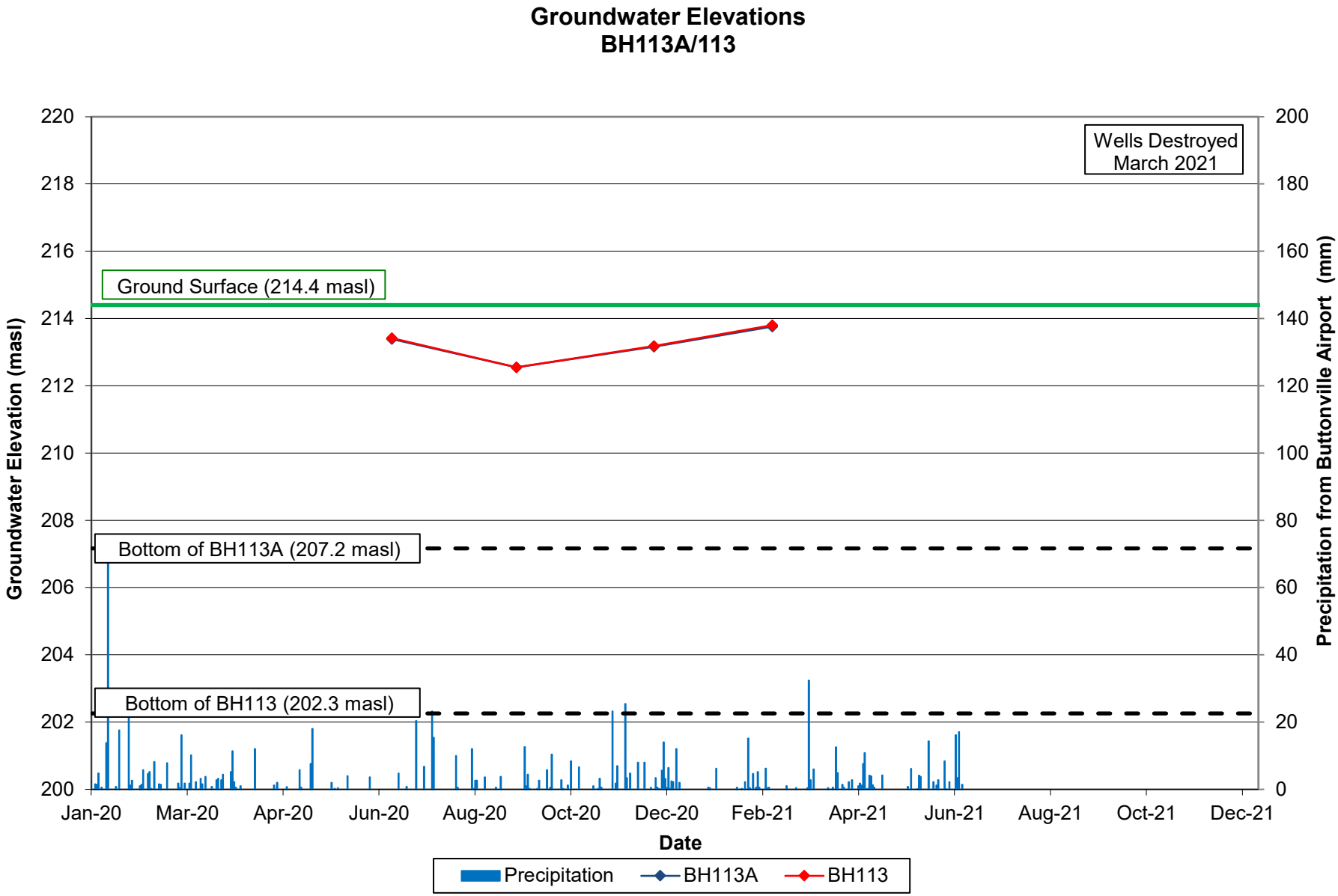
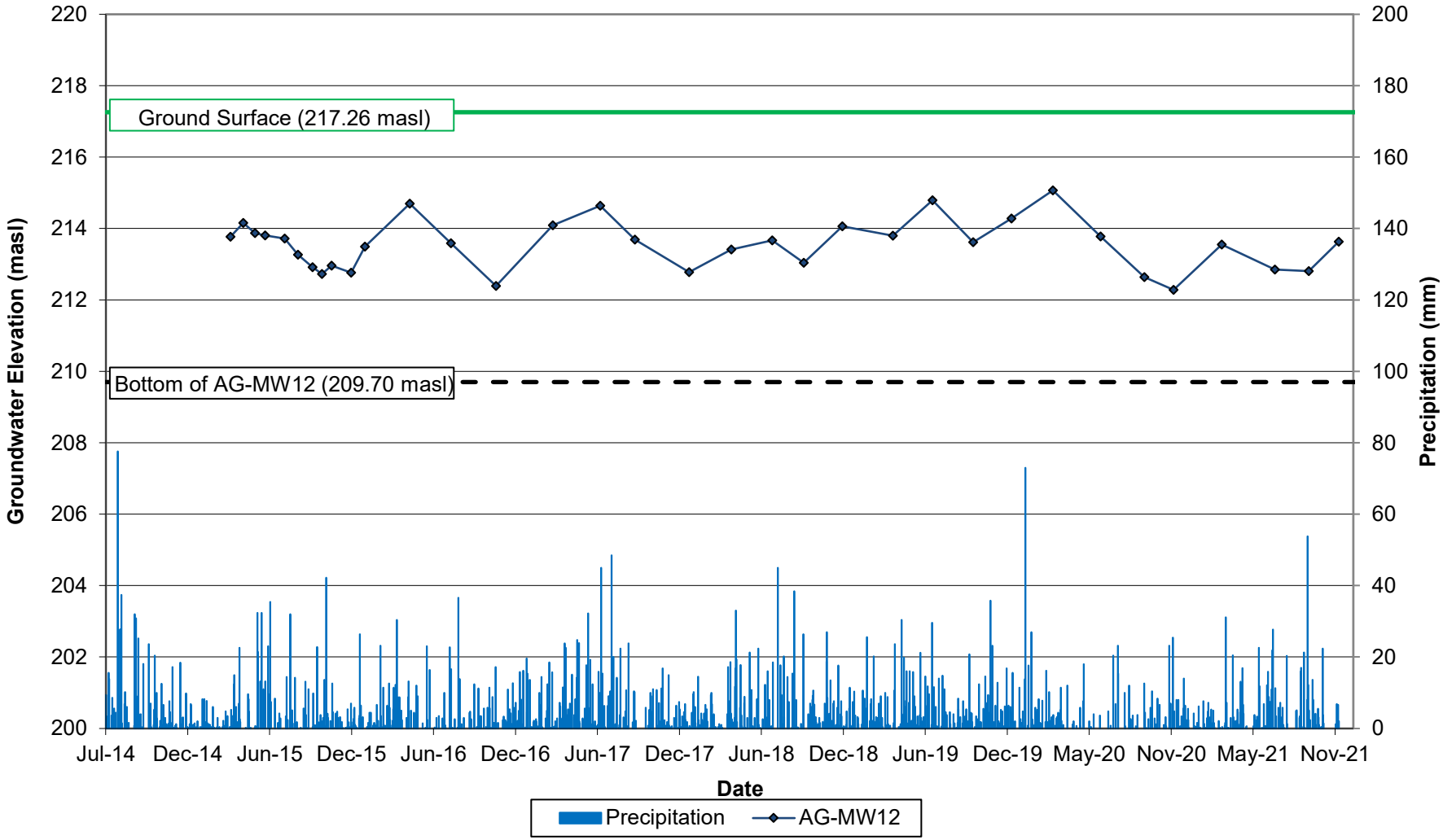
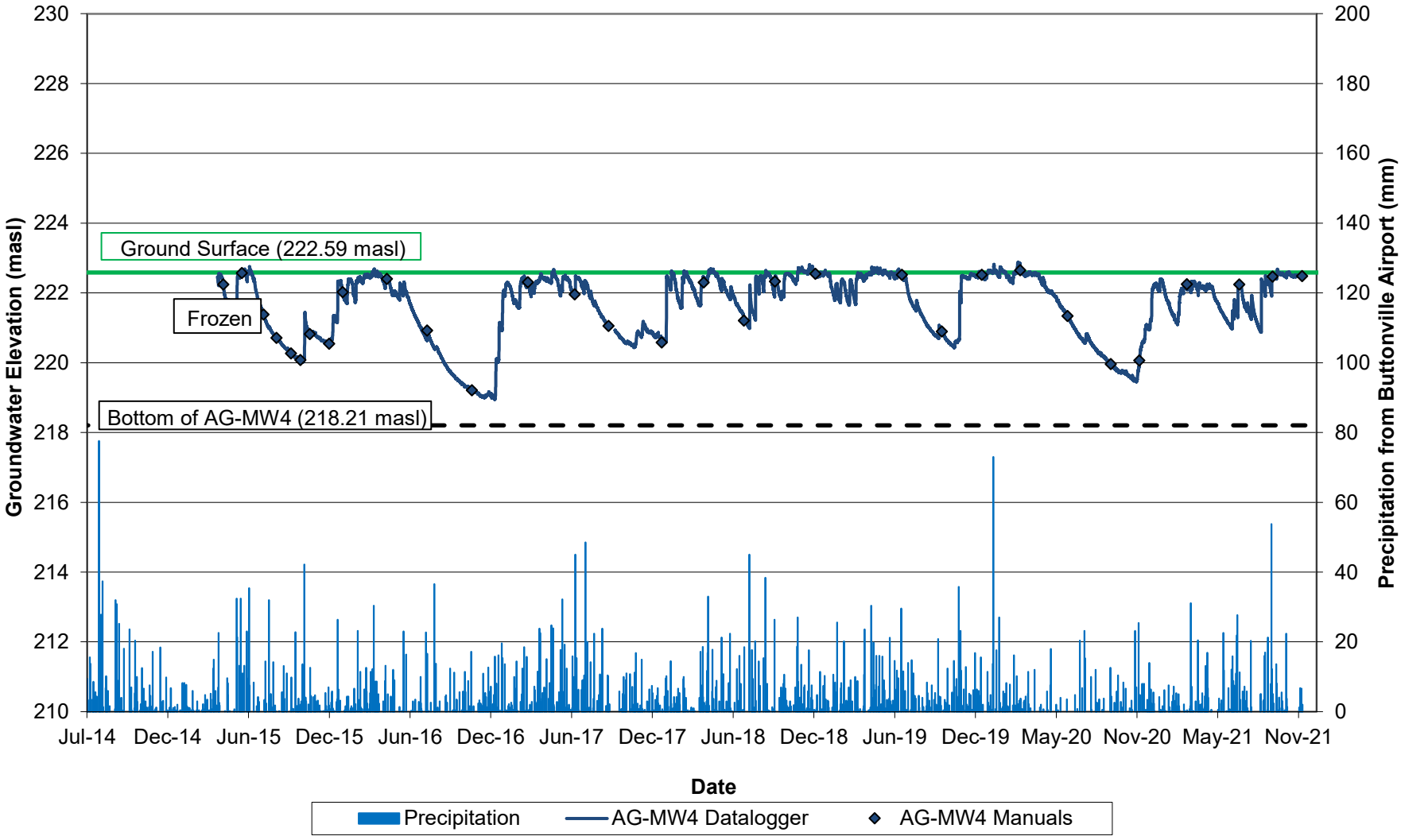

Groundwater Elevations
BH113A/113
Wells Destroyed
March 2021
Ground Surface (214.4 masl)
Bottom of BH113A (207.2 masl)
Bottom of BH113 (202.3 masl)
Groundwater Elevation (masl)
Precipitation from Buttonville Airport (mm)
220
218
216
214
212
210
208
206
204
202
200
200
180
160
140
120
100
80
60
40
20
0
Jan-20
Mar-20
Apr-20
Jun-20
Aug-20
Oct-20
Dec-20
Feb-21
Apr-21
Jun-21
Aug-21
Oct-21
Dec-21
Date
Precipitation
BH113A
BH113

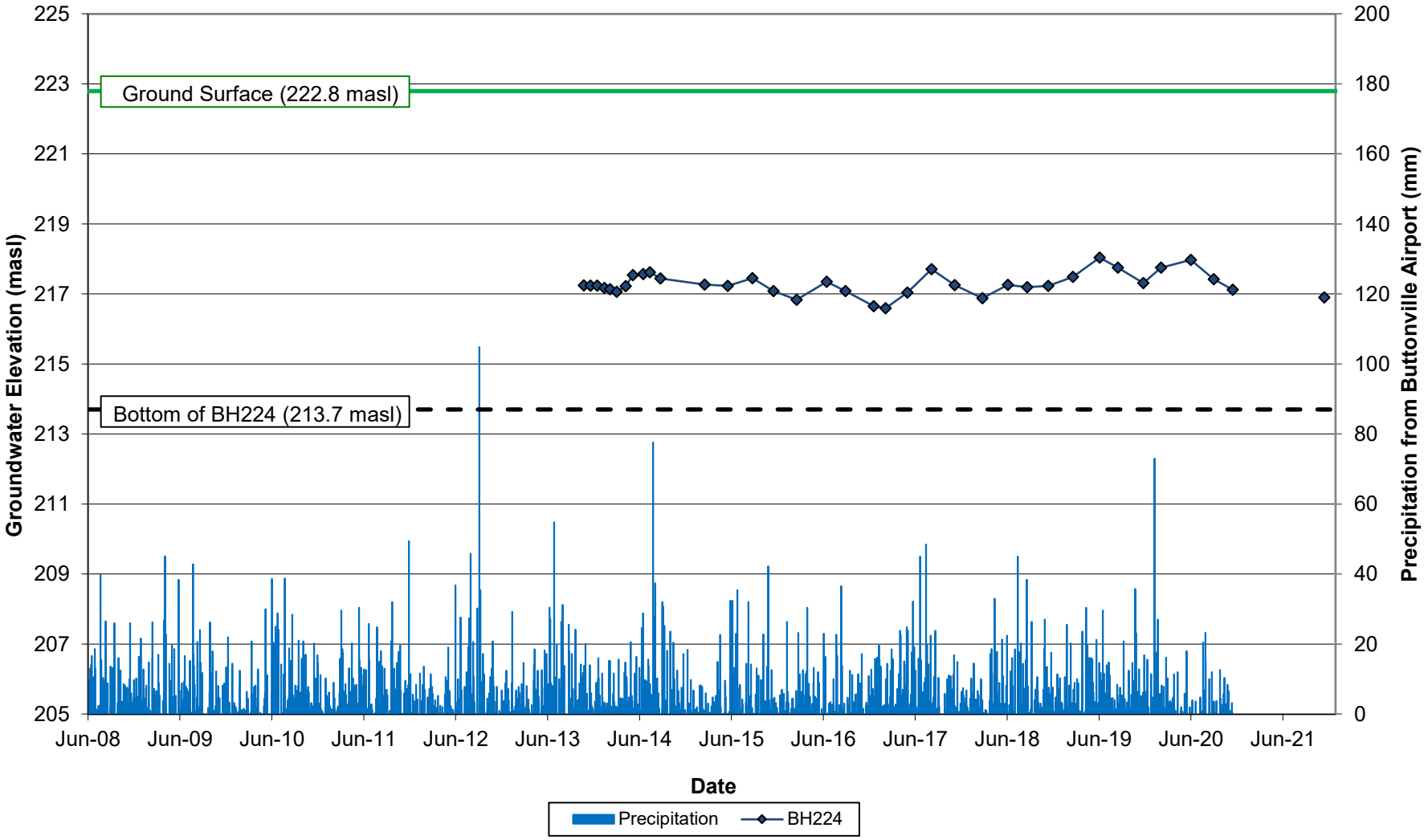
Groundwater Elevations
AG-MW12



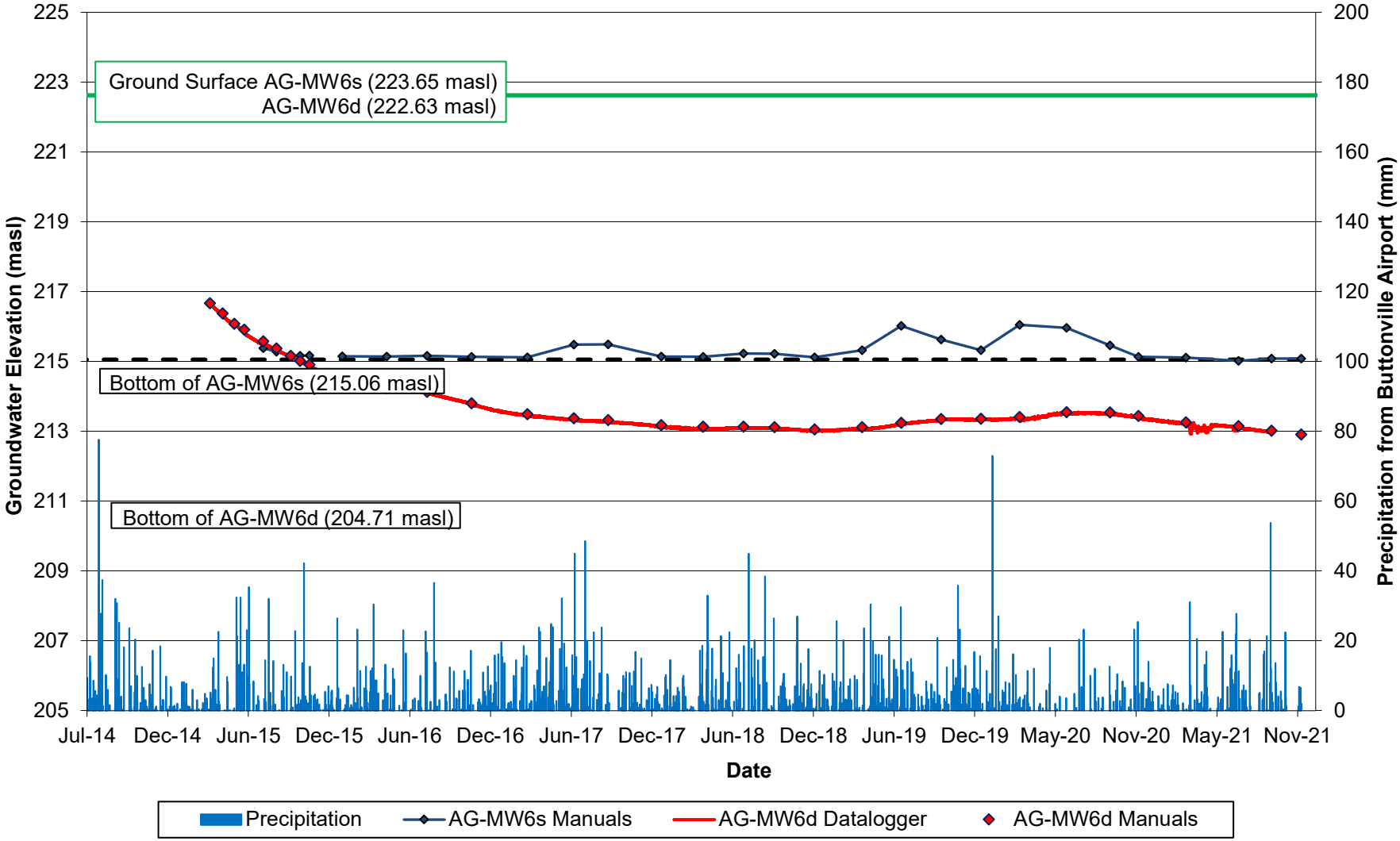
Groundwater Elevations
AG-MW4



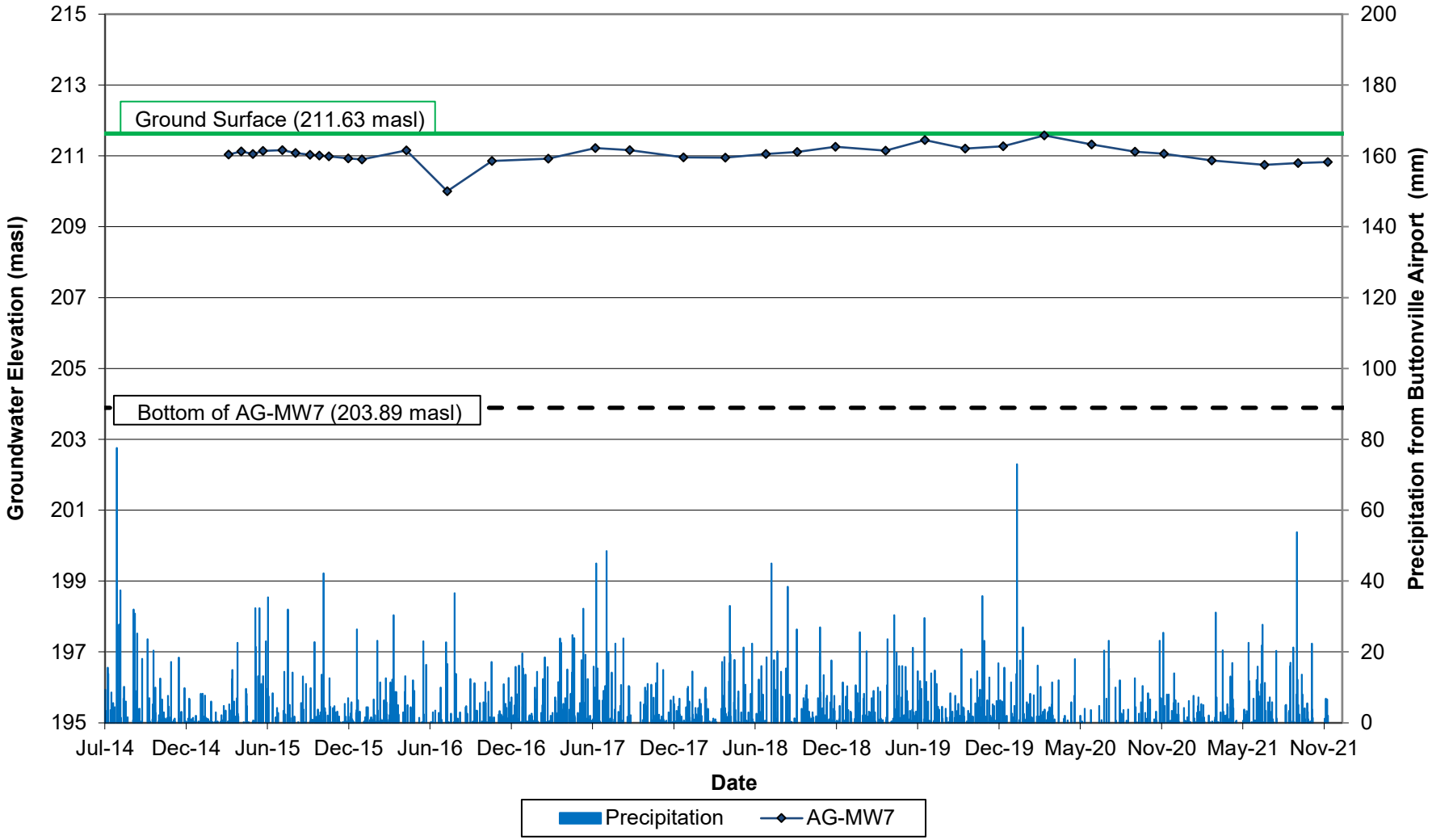
Groundwater Elevations
BH224

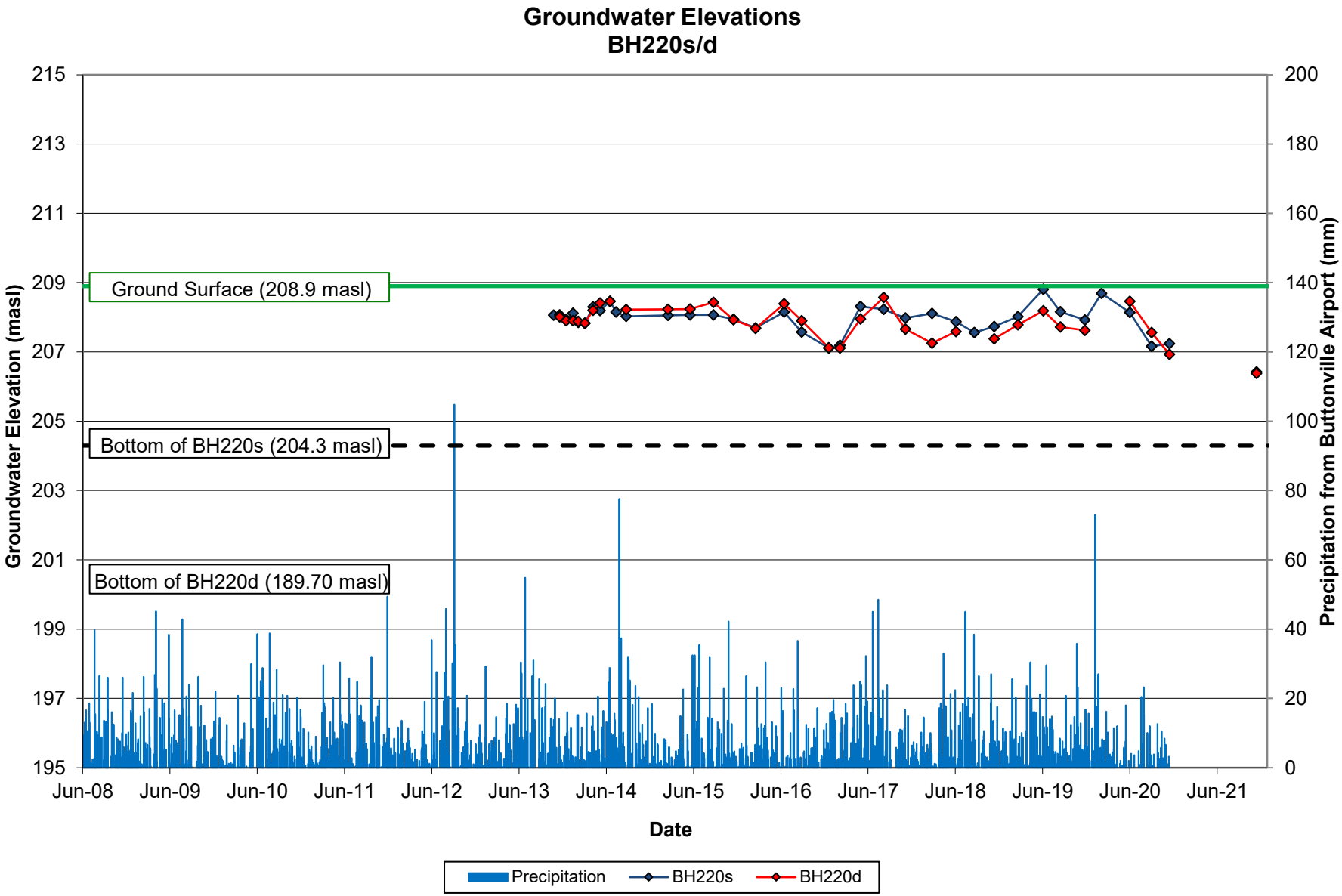


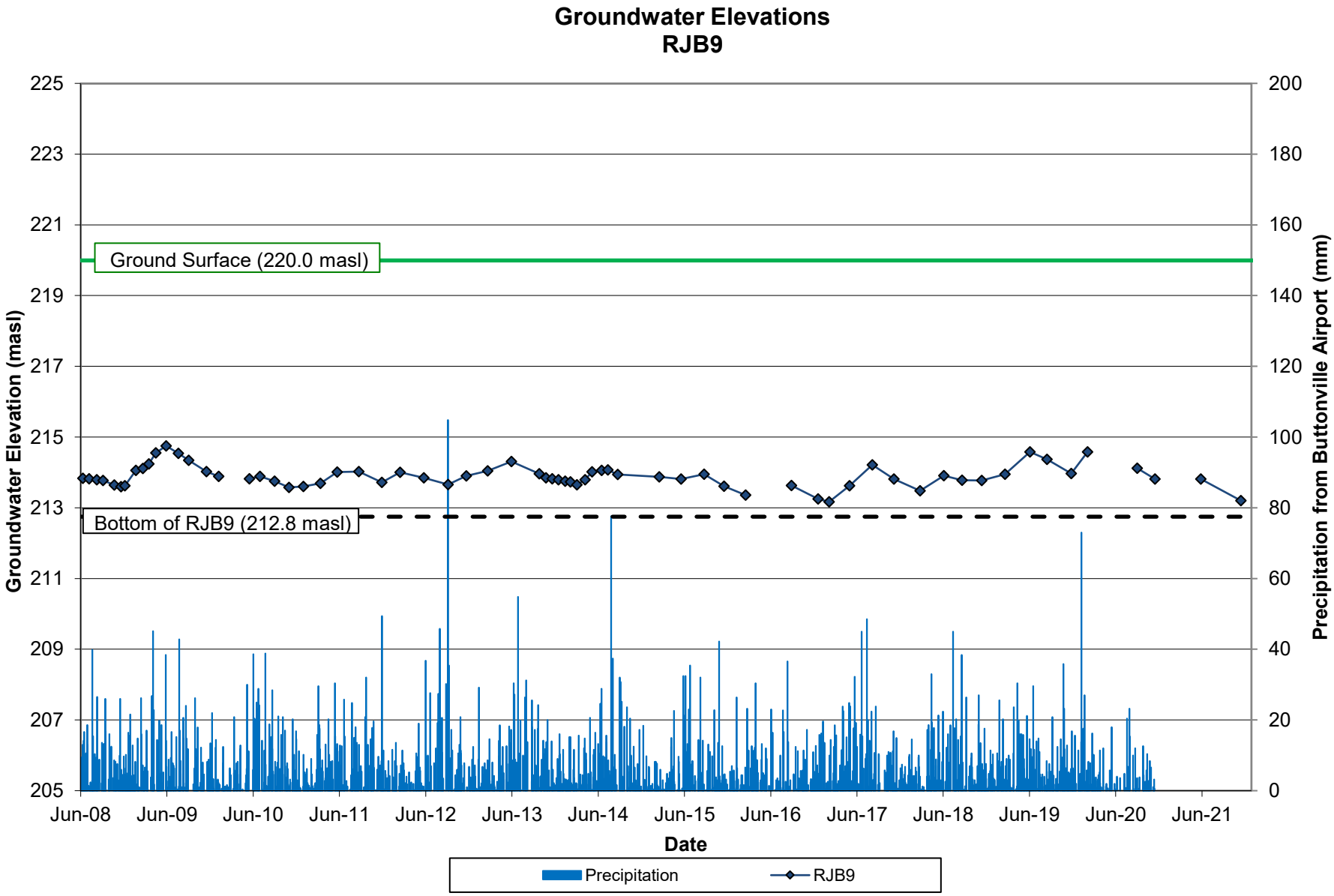
Groundwater Elevations
AG-MW6s/d



Groundwater Elevations
AG-MW7




Groundwater Elevations
BH220s/d
Groundwater Elevation (masl)
Precipitation from Buttonville Airport (mm)
Ground Surface (208.9 masl)
Bottom of BH220s (204.3 masl)
Bottom of BH220d (189.70 masl)
215
213
211
209
207
205
203
201
199
197
195
200
180
160
140
120
100
80
60
40
20
0
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15
Jun-16
Jun-17
Jun-18
Jun-19
Jun-20
Jun-21
Date
Precipitation
BH220s
BH220d


Groundwater Elevations
RJB9
Ground Surface (220.0 masl)
Bottom of RJB9 (212.8 masl)
Groundwater Elevation (masl)
Precipitation from Buttonville Airport (mm)
225
223
221
219
217
215
213
211
209
207
205
200
180
160
140
120
100
80
60
40
20
0
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15
Jun-16
Jun-17
Jun-18
Jun-19
Jun-20
Jun-21
Date
Precipitation
RJB9

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Appendix D

Culvert Dewatering Assessment

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Technical Memorandum

Date: February 24, 2023 **Project No.:** 300052314.0000

Project Name: Culvert - Dewatering Assessment

Client Name: Regional Municipality of York

Submitted To: Edward Chiu, Region of York

Submitted By: Stephanie Charity, P.Geo.

Reviewed By: Travis Mikel, P.Geo.

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by the Regional Municipality of York (York Region) to complete a dewatering assessment for a proposed watermain along Warden Avenue. As part of the study an estimate of dewatering required for the installation of a new culvert where the tributary of Bruce Creek crosses Warden Avenue was also completed.

The report was titled “Dewatering Assessment Report, Warden Avenue Watermain and Future Culvert Replacement, Regional Municipality of York, Marham, Ontario, R.J. Burnside & Associates Limited, December 2021.”

The following memo outlines the methodology and calculations completed to estimate the potential dewatering rates required for construction of the replacement culvert.

2.0 Dewatering Requirements

Based on groundwater monitoring completed as part of previous studies (Burnside, 2018) it was determined that the replacement of the culvert may require excavations below the groundwater table and control of groundwater seepage into the open excavations will be required through the use of dewatering techniques.

The total dewatering volume is anticipated to comprise of the following components:

- groundwater seepage
- precipitation and runoff

Dewatering rates have been calculated using a conservative approach with runoff volumes being set based on an estimated storm event and available hydraulic conductivity values being used to estimate groundwater seepage. Calculations are provided in Table D-1 attached.

2.1 Groundwater Seepage

The amount of groundwater seepage into the open excavation that will be encountered is controlled by the hydraulic conductivity of the sediments that make up the subsurface deposits, as well as the local hydraulic gradients. Conditions such as the degree of weathering and fracturing, as well as the amount of silt and sand and gravel and layering, may affect the overall effective hydraulic conductivity of the overburden deposits.

The extent of groundwater dewatering required in the excavations can be estimated using the following formulae as presented in Groundwater Lowering in Construction – A Practical Guide to Dewatering, 2nd Edition" (Cashman & Preen, 2013).

The following equation is suitable for maintenance holes or short excavation lengths which groundwater infiltration is approximated as flow to an equivalent well:

$$Q = \pi K(H^2-h^2)/(\ln R_o/r_s)$$

Where:

Q = Discharge (m^3/sec)
K = Hydraulic Conductivity (m/sec)
H = Initial water level relative to datum (m)
h = Final water level relative to the datum required for dewatering (m)
R_0 = Radius of influence of dewatering (m)
r_s = Equivalent radius of dewatering well (m)
π = 3.1416

Dewatering calculations were completed based on an estimated hydraulic conductivity of the overburden sediments, the proposed excavation elevation and available groundwater elevation data. The dewatering calculations are presented in Table D-1. It was assumed that the dimensions of the excavation for the culvert replacement would be no more than 7.5 m x 5 m. Excavation inverts for the culvert were obtained from engineering drawings provided by SCS dated June 2021.

A review of boreholes in the area of the culvert indicates that nearby soils consist of fill and till. Hydraulic conductivity estimates for the overburden along Warden Avenue ranged from 10^{-8} m/sec to 10^{-5} m/sec (Burnside, 2022). The sediments are dominantly fine-grained silt, clay and till deposits which typically restrict groundwater movement. To calculate the typical dewatering volumes, a hydraulic conductivity value based on testing of wells screened within the sandy silt till sediments was used (3.9×10^{-7} m/sec). To calculate the maximum pumping volumes, a safety factor of 2 was applied.

The potential daily groundwater seepage estimates are provided below in Table 1.

Table 1: Groundwater Seepage

Source	Typical Groundwater Seepage (L/day)	Max Groundwater Seepage (L/day)
Culvert Excavation	5,500	11,000

2.2 Precipitation and Runoff

In the event of precipitation, rain falling directly on the construction area will likely pool in the excavation area and in order for work to continue in the dry, the pooled water will need to be pumped. The estimated runoff volume based on a typical 5 mm rain event with all the water generated being pooled within the excavation is 333 L.

2.3 Total Estimated Dewatering Volume

The total volume of water that will be generated into the open excavation during construction is made up of the two components groundwater seepage and precipitation and runoff. The precipitation volume also acts as a factor of safety for the groundwater seepage calculations as higher rates of groundwater flow are possible in the initial stages of dewatering. The table below summarizes the estimated total volumes of takings.

Table 2: Estimated Dewatering Volumes

Source	Typical Total		Max Total	
	(L/day)	(L/min)	(L/day)	(L/min)
Culvert Excavation	5,833	4	11,333	8

2.4 Zone of Influence

The extent of the water table drawdown (i.e., Zone of Influence/Radius of Influence) that may occur when excavations are dewatered by pumping or gravity drainage has been approximated with an empirical relationship by Sichart and Kryieleis and presented in “Groundwater Lowering in Construction – A Practical Guide to Dewatering, 2nd Edition” (Cashman & Preen, 2013).

The radius of influence due to dewatering by pumping may be estimated from the following equation:

$$R_0 = 3000(H-h)K^{0.5}$$

Where:

K = Hydraulic conductivity (m/sec)
H = Existing height of the water table relative to datum (m)
h = Height of the water table after dewatering relative to datum (m)
R_0 = Lateral extent of drawdown/radius of influence/Zone of Influence (m)
r_s = Equivalent radius of well or system (m)

The literature indicates that the value of the constant 3,000 is applicable for situations when there is active pumping (as anticipated to occur in this case). When the radius of the well is not small compared to the radius of influence it is recommended to add the equivalent radius of the well resulting in the following equation:

$$R_0 = r_s + 3000(H-h)K^{0.5}$$

Using these equations, the calculations for the R_o (radius of influence) was calculated to be 11 m (Table D-1).

3.0 Conclusions

In conclusion, dewatering associated to the replacement of the culvert are estimated to be from 5,833 L/day to a maximum of 11,333 L/day. The estimated volume of water required for dewatering will not require a Permit to Take Water or Environmental Activity Sector Registration (EASR). Any water discharged to a surface water course should meet any applicable water quality guidelines.

R.J. Burnside & Associates Limited

Stephanie Charity

Stephanie Charity, P.Geo.
Hydrogeologist
SC:cl

Enclosure(s) Table D-1 – Dewatering Calculations

cc: Jessica Lee, Region of York (enc.) (Via: Email)

Table D-1: Dewatering Calculations

Groundwater Seepage - Radial Flow

Source	Excavation Invert m asl	Water Table masl	Dewatering Level masl	Dewatering Drawdown m	Datum masl	Soil Type	K m/s	H m	h m	R_o m	Width of Excavation m	Length of Excavation m	Equivalent Radius (r_s) m	Q unconfined L/day	Q unconfined L/min
Culvert Excavations	211.45	214.45	210.45	4.0	205	Sandy Silt Till	3.90E-07	9.45	5.45	11	5.0	7.5	3.5	5,470	4

Notes:

m	metres
masl	metres above sea level
m/s	metres per second

Dewatering level assumed to be 1 m below the base of the excavation
Datum is based on interpreted bottom of surficial aquifer.
Dewatering methods will be determined by the dewatering contractor retained to do the work.
Water table based on levels collected at closest monitoring wells (Burnside, 2014-2021)
Depths of excavations taken from servicing plan provided by SCS Consulting Group dated June 2021.

H is saturated thickness of aquifer before pumping [m];
h is saturated thickness of aquifer under pumping conditions [m];
R_0 is radius of pumping influence [m];
r_s is equivalent radius of pumping well [m];
Q is pumping rate;
K is hydraulic conductivity [m/s];

The following equation is relevant in the case of radial flow towards the circular shafts:

Unconfined:

$$Q = \frac{\pi K\left(H^2 - h^2\right)}{\ln\left(\frac{R_0}{r_s}\right)}$$

Confined:
(assumed)

$$Q = \frac{\pi BK\ \left(H - h\right)}{\ln\left(\frac{R_0}{r_s}\right)}$$

Where:

$R_0 = 3000\ (H\text{-}h)\ K^{0.5} + r_s$

K = the hydraulic conductivity (m/sec)
H = the existing height of the water table (m)
h = the height of the water table after dewatering (m)
R_0 = the lateral extent of drawdown (m)
Q = pumping rate [m^3/s];
r_s = $\sqrt{}$ (width of excavtion x length of excavation) /π

R.J. Burnside & Associates Limited