

Appendix A Land Tenure Information

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Chester	116529	3018412	70% IAMGOLD, 30% SMM	70% IAMGOLD, 30% SMM (APPLICATION)	Pending Survey Instructions
		164948	3018412			
		274189	3018412			
		322897	3018412			
		142041	3011820			
		274188	3011820			
		274189	3011820			
		322897	3011820			



Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Chester	125391	549007	70% 986813 ON, 30% SMM	70% 986813 ON, 30% SMM (APPLICATION)	Pending Survey Instructions
		251589	549007			
		260811	549007			
		315590	549007			
		129654	549008			
		161591	549008			
		251589	549008			
		260811	549008			
		129654	549009			
		161591	549009			
		263509	549009			
		330169	549009			
		125391	549010			
		260811	549010			
		129654	549011			
		260811	549011			
		129654	549012			
		330169	549012			
		125391	549013			
		224288	549013			
		244747	549013			
		260811	549013			
		129654	549014			
		164882	549014			
		224288	549014			
		260811	549014			
		122482	549015			
		129654	549015			
		164882	549015			
		330169	549015			
		162883	549016			
		224288	549016			
		244747	549016			
		277421	549016			
		152428	549001			
		201396	549001			
		152428	549002			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		162883	549002			
		201396	549002			
		244747	549002			
		145464	549003			
		201371	549003			
		204031	549003			
		287591	549003			
		201371	549004			
		201396	549004			
		257479	549004			
		287591	549004			
		201396	549005			
		257479	549005			
		115082	549006			
		162883	549006			
		201396	549006			
		257479	549006			
		164882	549115			
		224288	549115			
		277421	549115			
		280305	549115			
		115082	549117			
		162883	549117			
		277421	549117			
		296277	549117			
		260837	549294			
		277421	549294			
		280305	549294			
		296277	549294			
		106690	546980			
		141715	546980			
		106690	546981			
		148859	546981			
		148859	546982			
		211011	546982			
		211012	546982			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		308263	546982			
		106690	546983			
		141715	546983			
		142865	546983			
		255182	546983			
		106690	546984			
		142865	546984			
		148859	546984			
		165920	546984			
		148859	546985			
		165920	546985			
		148859	546986			
		165920	546986			
		308263	546986			
		315590	546986			
		142865	546987			
		171193	546987			
		190081	546987			
		255182	546987			
		142865	546988			
		165920	546988			
		190081	546988			
		283825	546988			
		165920	546989			
		283825	546989			
		125391	546990			
		165920	546990			
		283825	546990			
		315590	546990			
		171193	546991			
		190081	546991			
		152428	546992			
		190081	546992			
		283825	546992			
		322497	546992			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		152428	546993			
		283825	546993			
		125391	546994			
		152428	546994			
		244747	546994			
		283825	546994			
		171193	546995			
		190081	546995			
		239366	546995			
		322497	546995			
		152428	546996			
		190081	546996			
		322497	546996			
		152428	546997			
		152428	546998			
		244747	546998			
		201371	546999			
		204031	546999			
		239366	546999			
		322497	546999			
		152428	547000			
		201371	547000			
		201396	547000			
		322497	547000			
		126274	473737			
		228289	473737			
		106039	473738			
		141715	473738			
		180286	473738			
		186087	473738			
		141715	473739			
		186087	473739			
		255182	473739			
		288683	473739			
		171193	473740			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		212780	473740			
		255182	473740			
		288683	473740			
		171193	473741			
		212780	473741			
		171193	473742			
		212780	473742			
		239366	473742			
		288781	473742			
		204031	473743			
		239366	473743			
		258180	473743			
		288781	473743			
		258179	473744			
		258180	473744			
		288781	473744			
		324838	473744			
		145464	473745			
		204031	473745			
		210836	473745			
		258180	473745			
		210836	473746			
		229643	473746			
		258180	473746			
		324838	473746			
		106039	549108			
		186087	549108			
		252881	549108			
		318791	549108			
		109568	549109			
		186087	549109			
		252881	549109			
		288683	549109			
		109568	549110			
		164869	549110			
		212780	549110			
		288683	549110			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		164869	549111			
		212780	549111			
		164869	549112			
		212780	549112			
		258179	549112			
		288781	549112			
		126274	549113			
		155575	549113			
		209455	549113			
		111876	473717			
		292883	473717			
		318791	473717			
		319232	473717			
		106376	473722			
		231902	473722			
		279905	473722			
		300152	473722			
		106145	473727			
		106376	473727			
		150162	473727			
		279905	473727			
		106145	473732			
		126274	473732			
		150162	473732			
		228289	473732			
		106039	528680			
		111876	528680			
		196606	528680			
		318791	528680			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Chester	158884	4201539	70% 986813 ON, 30% SMM	70% 986813 ON, 30% SMM (APPLICATION)	Pending Survey Instructions
		158936	548092			
		212837	548092			
		277540	548092			
		296885	548092			
		158936	1158643			
		277540	1158643			
		325813	1158643			
		331244	1158643			
		312589	1158644			
		312590	1158644			
		325813	1158644			
		331244	1158644			
		168129	515336			
		306317	515336			
		312589	515336			
		325813	515336			
		145394	515335			
		277540	515335			
		306317	515335			
		325813	515335			
		145394	543993			
		277540	543993			
		145393	538059			
		145394	538059			
		277540	538059			
		296885	538059			
		102106	538058			
		145393	538058			
		102106	538055			
		116537	538055			
		102106	538056			
		116537	538056			
		116537	881269			
		262542	881269			
		116537	881270			
		145394	881270			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		262542	881270			
		306317	881270			
		102106	538082			
		116537	538082			
		144071	538082			
		288186	538082			
		144071	543824			
		144072	543824			
		201477	543824			
		288186	543824			
		201477	543823			
		222955	543823			
		102106	538057			
		116537	538057			
		145393	538057			
		145394	538057			
		306317	538057			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Chester	158884	4201539	70% IAMGOLD, 30% SMM	70% IAMGOLD, 30% SMM (APPLICATION)	Pending Survey Instructions
		164888	4201539			
		204175	4201539			
		204189	4201539			
		212800	4201539			
		221584	4201539			
		231576	4201539			
		294902	4201539			
		314713	4201539			
		327416	4201539			
		158884	1191819			
		162163	1191819			
		204175	1191819			
		221584	1191819			
		294902	1191819			
		327416	1191819			
		162162	3018489			
		162163	3018489			
		162164	3018489			
		221584	3018489			
		294901	3018489			
		294902	3018489			
		148752	3007643			
		224578	3007643			
		232617	3007643			
		280623	3007643			
		117266	3006971			
		162162	3006971			
		162164	3006971			
		259585	3006971			
		294901	3006971			
		296947	3006971			
		102035	3010943			
		102036	3010943			
		129559	3010943			
		158832	3010943			
		177655	3010943			
		314662	3010943			
		148752	3018490			
		189417	3018490			
		314662	3018490			
		318282	3018490			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
		148752	1246710			
		189417	1246710			
		312151	1246710			
		125409	3011808			
		148752	3011808			
		189417	3011808			
		224578	3011808			
		312151	3011808			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Yeo	127554	4254022	70% IAMGOLD, 30% SMM	70% IAMGOLD, 30% SMM (APPLICATION)	Pending Survey Instructions
		210231	4254022			
		274087	4254022			
		322812	4254022			
		271286	4260697			
		343177	4260697			
		343177	4260698			
Non-Patented	Yeo	343177	4260699	↓	↓	↓
		274087	4260700			
		322812	4260700			
		320650	4260700			
		322813	4260700			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Chester	10162500%	1136163	64.75% IAMGOLD, 27.75% SMM, 7.5% Treelawn Invest. Corp	SAME (APPLICATION)	Pending Survey Instructions
		116234	1136163			
		161528	1136163			
		196275	1136163			
		290350	1136163			
		290351	1136163			
		341302	1136163			
		341939	1136163			
	Chester	101625	1136164			
		329461	1136164			
		341301	1136164			
		341302	1136164			
	Chester	122354	1210929			
		122355	1210929			
		180328	1210929			
		233678	1210929			
		262884	1210929			
		262885	1210929			
		282944	1210929			
		329461	1210929			
		341301	1210929			

Type	Township/ Area	Cell Claim	Legacy Claim	Mining Rights Owner	Surface Rights Owner	Status of Claims-to-Lease Process
Non-Patented	Yeo	116452	4240522	70% IAMGOLD, 30% SMM	70% IAMGOLD, 30% SMM (APPLICATION)	Pending Survey Instructions
		177718	4240522			
		177719	4240522			
		204180	4240522			
		231585	4240522			
		260251	4240522			
		260252	4240522			
		297626	4240522			
		327426	4240522			
Non-Patented	Yeo	102747	4241016			
		116452	4241016			
		153091	4241016			
		177719	4241016			
		218422	4241016			
		218423	4241016			
		226375	4241016			
		226376	4241016			
		260252	4241016			
		285676	4241016			
		287506	4241016			
		321723	4241016			
Non-Patented	Chester	155482	4220425			
		287506	4220425			
		274867	4220425			

Appendix B Owner Operation Clarification



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May 23, 2018

To: Ministry of Northern Development and Mines
Willet Green Miller Ctr Level B6
933 Ramsey Lake Road
Sudbury, ON
P3E 6B5

Attention: Mr. Brian McMahon
Director – Mineral Development and Lands Branch

And To: Ontario Government Ministries generally, including:
Ministry of Natural Resources and Forestry
Ministry of the Environment and Climate Change
Ministry of Labour
Ministry of Finance
Ministry of Municipal Affairs
Ministry of Indigenous Relations and Reconciliation

And To: Federal Ministries and Departments generally, including:
Department of Fisheries and Oceans
Department of Indigenous and Northern Affairs
Department of Environment and Climate Change
Department of Natural Resources

Re: Joint Venture regarding the Cote Gold project and other adjacent mining properties (the “properties”) located in north-eastern Ontario between IAMGOLD Corporation and Sumitomo Metal Mining Co., Ltd. and its subsidiary SMM Gold Cote Inc. (“SMM”)

Please be advised that on June 20, 2017 the parties above entered into a Joint Venture Agreement with respect to the properties. Pursuant to the Joint Venture Agreement:

- (i) SMM acquired a 30% interest in the properties;
- (ii) IAMGOLD remains the Operator with respect to all activities and operations regarding the properties; and
- (iii) As Operator, IAMGOLD has the obligation to obtain and maintain, and register in its name, all permits, approvals, consents, waivers, certificates, authorizations and permissions from any governmental authority with respect to activities on the properties.

In accordance with the above mandate as Operator, SMM as a signatory to this letter,

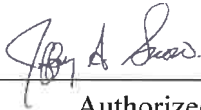
- (i) directs the closure plan which IAMGOLD currently has on file with the Director of Mine Rehabilitation for the Ministry of Northern Development and Mines, be maintained in the sole name of IAMGOLD, and any closure plan to be filed in future with respect to the properties shall also be filed in the name of IAMGOLD, as Operator; and
- (ii) advises all other Ontario ministries and Federal ministries and departments (including those listed in this letter) to issue any permits, approvals, consents, certificates, authorization or permissions regarding the properties in the sole name of IAMGOLD, as Operator.

To the extent any government authority requires SMM to provide a direction directly to it with respect to any matter, SMM is prepared to provide an updated direction in furtherance of such request.

Dated this 23rd day of May, 2018.

IAMGOLD CORPORATION

By:



Authorized officer

Jeffery A. Snow

Name

SVP, Business Development and General
Counsel

Title

SMM GOLD COTE INC.

By:



Authorized officer

Eirichi Fukuda

Name

President and Secretary

Title

Appendix C Baseline Surface Water Quality - Golder Associates

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: CHLK - Chester Lake Outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	38	4.5	7.7	5.8	6.8	7.5
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	38	-0.080	26	8.9	4.0	24
Conductivity	µS/cm	--	--	--	--	--	--	--	38	19	48	29	27	45
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	38	5.5	15	9.8	9.4	14
ORP	mV	--	--	--	--	--	--	--	38	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	38	6.0	7.4	6.5	6.7	7.3
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	38	6.0	22	13	12	17
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	38	2.5	2.5	2.50	2.5	2.50
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	38	27.0	52	40	40	50
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	38	10	70	45	46	62
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	38	0.50	6.0	1.5	1.0	3.6
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	38	13	26	19	19	25
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	38	8.3	17	13	13	16
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	38	12.7	15.6	14.00	14.1	15.32
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	38	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	38	3.9	8.0	6.0	6.1	7.6
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	38	0.73	1.4	1.1	1.0	1.4
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	38	0.18	0.37	0.29	0.29	0.36
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	38	0.61	1.0	0.80	0.80	0.94
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	38	0.12	0.82	0.32	0.33	0.43
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	38	0.025	0.025	0.025	0.025	0.025
Sulphate (SO ₄)	mg/L	<0.1	--	--	500	--	--	--	38	1.6	3.8	2.7	2.7	3.5
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	38	0.024	0.12	0.066	0.067	0.094
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	38	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	38	0.0015	0.0015	0.0015	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	38	0.0030	0.0080	0.0046	0.0045	0.0060
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	38	0.00050	0.00050	0.00050	0.00050	0.00050
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	38	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	38	0.000010	0.000010	0.000010	0.000010	0.000010
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	38	0.0015	0.0015	0.0015	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	38	0.00025	0.00025	0.00025	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	38	0.00050	0.0020	0.00084	0.0007	0.0017
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	38	0.086	0.37	0.20	0.19	0.35
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	38	0.00010	0.00050	0.00032	0.00040	0.00050
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	38	0.010	0.065	0.025	0.021	0.049
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	38	0.00000095	0.000027	0.000004	0.000001	0.000011
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	38	0.0010	0.0010	0.0010	0.0010	0.0010
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	38	0.0015	0.0015	0.0015	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	38	0.000050	0.0003	0.0001	0.0001	0.0002
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	38	0.0000050	0.000020	0.000006	0.000005	0.000011
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	38	0.0080	0.025	0.013	0.013	0.017
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	38	0.0000050	0.00002	0.00001	0.00001	0.00001
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	38	0.0010	0.0010	0.0010	0.0010	0.0010

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: CHLK - Chester Lake Outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	38	0.0050	0.0050	0.0050	0.0050	0.0050
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	38	0.0010	0.0010	0.0010	0.0010	0.0010
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	38	0.0010	0.0010	0.0010	0.0010	0.0010
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	38	0.0025	0.055	0.009	0.0025	0.036
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	38	0.0020	0.0020	0.0020	0.0020	0.0020
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	38	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

nc = Statistic is not calculated for that parameter

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: CM - Culvert Road Crossing of Clam Lake					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
MDL	50%													
FIELD PARAMETERS														
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	36	5.5	8.5	6.5	7.0	7.9
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	36	-1.0	27	8.4	3.1	25
Conductivity	µS/cm	--	--	--	--	--	--	--	36	20	58	30	25	48
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	36	1.2	19	9.1	8.8	16
ORP	mV	--	--	--	--	--	--	--	36	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	36	6.0	7.5	6.6	6.7	7.4
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	36	9.0	23	14	14	19
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	36	2.5	2.5	2.50	2.5	2.50
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	36	36.0	53	43	43	52
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	36	10	86	38	40	53
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	36	0.50	6	2	2.0	4.9
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	36	15	24	19	19	23
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	36	5.7	13	8.5	8.4	11.0
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	36	7.7	13.7	10.00	9.4	13.53
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	36	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	36	4.9	7.9	6.2	6.3	7.4
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	36	0.67	1.1	0.91	0.91	1.07
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	36	0.27	0.93	0.39	0.37	0.46
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	36	0.55	0.83	0.69	0.69	0.81
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	36	0.05	0.48	0.32	0.34	0.41
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	36	0.025	0.025	0.025	0.025	0.025
Sulphate (SO ₄)	mg/L	<0.1	--	--	500	--	--	--	36	2.0	4.9	3.4	3.3	4.6
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	36	0.0040	0.078	0.021	0.017	0.051
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	36	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	36	0.0015	0.0015	0.0015	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	36	0.0030	0.0060	0.0043	0.0040	0.0060
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	36	0.00050	0.00050	0.00050	0.00050	0.00050
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	36	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	36	0.000010	0.000010	0.000010	0.000010	0.000010
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	36	0.0015	0.0015	0.0015	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	36	0.00025	0.00025	0.00025	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	36	0.0006	0.0027	0.0014	0.0013	0.0021
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	36	0.0050	0.29	0.086	0.061	0.239
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	36	0.000050	0.00050	0.00030	0.00050	0.00050
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	36	0.0030	0.058	0.017	0.013	0.040
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	36	0.00000095	0.000004	0.000001	0.000001	0.000004
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	36	0.0010	0.0010	0.0010	0.0010	0.0010
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	36	0.0015	0.0015	0.0015	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	36	0.000050	0.0006	0.0001	0.0001	0.0004
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	36	0.0000050	0.00001	0.000005	0.000005	0.000005
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	36	0.009	0.017	0.013	0.013	0.016
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	36	0.0000050	0.00003	0.00001	0.00001	0.00002
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	36	0.0010	0.0030	0.0011	0.0010	0.0013
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	36	0.0050	0.0050	0.0050	0.0050	0.0050
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	36	0.0010	0.0010	0.0010	0.0010	0.0010
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	36	0.0010	0.0010	0.0010	0.0010	0.0010

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: CM - Culvert Road Crossing of Clam Lake					
			MAC	IMAC	AO	OG								
MDL	50%								Number of samples	Minimum	Maximum	Average	Median	95th percentile
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	36	0.0025	0.0680	0.0057	0.0025	0.0105
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	36	0.0020	0.0020	0.0020	0.0020	0.0020
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	36	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

nc = Not calculated

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: 3D-C - Three Ducks Lakes, upper basin outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	8	nc	nc	nc	nc	nc
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	8	nc	nc	nc	nc	nc
Conductivity	µS/cm	--	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
ORP	mV	--	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	8	6.7	7.4	7.2	7.3	7.4
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	8	11.0	23	16	16	22.3
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	8	2.5	2.5	2.50	2.5	2.5
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	8	34.0	55	43	43	52.2
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	8	30	60	47	50	57.2
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	8	0.50	2.0	0.9	1.0	1.7
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	8	16	26	19	19	24.8
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	8	10.3	13	12	12	13.3
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	8	10.8	14.3	12.89	13.3	14.2
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	8	4.9	8.2	6.0	5.9	7.8
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	8	0.85	1.4	1.1	1.1	1.3
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	8	0.29	0.36	0.31	0.30	0.4
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	8	0.71	1.0	0.81	0.74	1.0
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	8	0.28	0.45	0.37	0.37	0.4
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	8	0.025	0.025	0.0	0.025	0.0
Sulphate (SO ₄)	mg/L	<0.1	--	--	500	--	--	--	8	1.910	2.5	2.3	2.4	2.5
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	8	0.035	0.096	0.062	0.057	0.094
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	8	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	8	0.0015	0.0015	0.0015	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	8	0.0040	0.0060	0.0048	0.0050	0.0057
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	8	0.00050	0.00050	0.00050	0.00050	0.00050
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	8	0.00500	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	8	0.000010	0.000010	0.000010	0.000010	0.000010
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	8	0.001500	0.0015	0.0015	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	8	0.00025	0.00025	0.00025	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	8	0.00100	0.0022	0.0013	0.0012	0.0019
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	8	0.0790	0.25	0.16	0.13	0.24
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	8	0.000050	0.00040	0.00013	0.00010	0.00033
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	8	0.00900	0.026	0.016	0.015	0.025
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	8	0.00000095	0.000004	0.000001	0.000001	0.000003
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	8	0.001000	0.0010	0.0010	0.0010	0.0010
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	8	0.0015	0.0015	0.0015	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	8	0.000050	0.0003	0.0001	0.0001	0.0003
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	8	0.0000050	0.000020	0.000007	0.000005	0.000015
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	8	0.011000	0.015	0.013	0.013	0.014
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	8	0.0000050	0.00001	0.00001	0.00001	0.00001
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	8	0.00100	0.0010	0.0010	0.0010	0.0010

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: 3D-C - Three Ducks Lakes, upper basin outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	8	0.0050	0.0050	0.0050	0.0050	0.0050
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	8	0.0010	0.0010	0.0010	0.0010	0.0010
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	8	0.0010	0.0010	0.0010	0.0010	0.0010
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	8	0.0025	0.0050	0.0028	0.0025	0.0041
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	8	0.0020	0.0020	0.0020	0.0020	0.0020
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	8	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

nc = Not calculated

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: P-4 - Inflow to Mollie River					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	13	5.6	7.0	6.06	6.4	6.8675
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	13	nc	17.0	5.08	1.65	14.87
Conductivity	µS/cm	--	--	--	--	--	--	--	13	14.0	32.3	22.83	22.5	31.13
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	13	6.5	12.9	10.80	11.905	12.784
ORP	mV	--	--	--	--	--	--	--	13	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	13	5.7	7.1	6.36	6.66	7.074
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	13	2.5	13.0	9.04	10	12.4
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	13	2.5	2.5	2.50	2.5	2.5
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	13	8.0	49.0	31.85	33	43
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	13	44.0	82.0	63.54	62	79.6
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	13	0.5	4.0	1.13	0.5	4
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	13	13.6	25.2	17.95	17.2	23.04
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	13	13.3	26.3	20.48	21.2	24.98
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	13	21.9	25.7	23.57	22.2	25.67
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	13	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	13	4.2	8.0	5.55	5.24	7.182
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	13	0.8	1.3	0.99	0.99	1.238
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	13	0.1	0.5	0.24	0.213	0.4272
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	13	0.7	1.0	0.82	0.81	0.9724
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	13	0.1	0.3	0.25	0.26	0.328
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	13	0.0	0.0	0.03	0.025	0.025
Sulphate (SO ₄)	mg/L	<0.1	--	--	500	--	--	--	13	1.3	4.0	2.24	2.04	3.322
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	13	0.1	0.2	0.14	0.138	0.1608
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	13	0.0	0.0	0.00	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	13	0.0	0.0	0.00	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	13	0.0	0.0	0.01	0.005	0.0064
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	13	0.0	0.0	0.00	0.0005	0.0005
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	13	0.0	0.0	0.01	0.005	0.005
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	13	0.0	0.0	0.00	0.00001	0.0000155
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	13	0.0	0.0	0.00	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	13	0.0	0.0	0.00	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	13	0.0	0.0	0.00	0.00065	0.001615
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	13	0.2	0.7	0.34	0.296	0.5624
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	13	0.0	0.0	0.00	0.0003	0.0005
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	13	0.0	0.1	0.03	0.021	0.0584
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	13	0.0	0.0	0.00	0.00000095	0.000008405
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	13	0.0	0.0	0.00	0.001	0.001
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	13	0.0	0.0	0.00	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	13	0.0	0.0	0.00	0.00005	0.00105
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	13	0.0	0.0	0.00	0.000005	0.00001
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	13	0.0	0.0	0.01	0.011	0.019
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	13	0.0	0.0	0.00	0.000005	0.0000255

2011-2013 Surface Water Quality Baseline Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: P-4 - Inflow to Mollie River					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	13	0.0	0.0	0.00	0.001	0.003
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	13	0.0	0.0	0.01	0.005	0.005
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	13	0.0	0.0	0.00	0.001	0.001
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	13	0.0	0.0	0.00	0.001	0.001
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	13	0.0	0.0	0.01	0.0025	0.0156
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	13	0.0	0.0	0.00	0.002	0.002
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	13	0.0	0.0	0.00	0.00000125	0.00000125

Notes:

nc = Not calculated

2011-2013 Surface Water Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: LCM - Little Clam Lake Outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5–8.5	6.5-9	6.5-8.5	33	4.2	7.6	5.4	6.5	7.5
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	33	-1.5	22	8.4	6.4	21
Conductivity	µS/cm	--	--	--	--	--	--	--	33	13	42	27	27	42
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	33	2.6	16	7.3	6.9	13.2
ORP	mV	--	--	--	--	--	--	--	33	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5–8.5	6.5-9	6.5-8.5	33	5.7	7.3	6.3	6.5	7.2
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	33	2.5	30	11	11	17
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	33	2.5	2.5	2.50	2.5	2.50
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	33	25	64	37	36	46
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	33	10	94	45	42	82
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	33	0.50	11.0	1.5	0.50	5.4
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	33	10.9	28	18	16	27
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	33	7.5	34	13	11	25
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	33	9.3	19.8	11.89	10.7	17.18
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	33	nc	nc	nc	nc	nc
MAJOR IONS														nc
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	33	3.6	10	6	5.4	9.1
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	33	0.47	1	1	0.68	1.01
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	33	0.025	1	0	0.28	0.53
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	33	0.60	1	1	0.72	0.85
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	33	0.11	0.43	0.29	0.30	0.40
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	33	0.025	0.025	0.025	0.025	0.025
Sulphate (SO₄)	mg/L	<0.1	--	--	500	--	--	--	33	0.16	4.1	2.4	2.8	3.6
METALS														nc
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	33	0.016	0.12	0.057	0.052	0.104
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	33	0.0005	0.001	0.00	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	33	0.0015	0.002	0.002	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	33	0.0020	0.0080	0.0044	0.00400	0.0074
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	33	0.00050	0.00050	0.00050	0.00050	0.00050
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	33	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	33	0.000010	0.000020	0.000011	0.0000100	0.000012
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	33	0.0015	0.0015	0.0015	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	33	0.00025	0.0011	0.00035	0.00025	0.00090
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	33	0.00040	0.0015	0.00074	0.0007	0.0012
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	33	0.020	0.70	0.14	0.076	0.44
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	33	0.000050	0.00050	0.00033	0.00050	0.00050
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	33	0.0030	0.20	0.038	0.011	0.149
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	33	0.00000095	0.000012	0.000002	0.000001	0.000006
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	33	0.0010	0.0010	0.0010	0.0010	0.0010
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	33	0.0015	0.0015	0.0015	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	33	0.000050	0.0005	0.0001	0.0001	0.0004
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	33	0.0000050	0.000005	0.000005	0.000005	0.000005
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	33	0.0080	0.030	0.014	0.013	0.019
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	33	0.0000050	0.00003	0.00001	0.00001	0.00001

2011-2013 Surface Water Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: LCM - Little Clam Lake Outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	33	0.0010	0.0080	0.0012	0.0010	0.0010
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	33	0.0050	0.0050	0.0050	0.0050	0.0050
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	33	0.0010	0.0010	0.0010	0.0010	0.0010
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	33	0.0010	0.0010	0.0010	0.0010	0.0010
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	33	0.0025	0.014	0.0042	0.0025	0.0110
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	33	0.0020	0.0020	0.0020	0.0020	0.0020
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	33	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

nc = Not calculated

2011-2013 Surface Water Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: ML - Moore Lake					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	10	nc	nc	nc	nc	nc
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	10	nc	nc	nc	nc	nc
Conductivity	µS/cm	--	--	--	--	--	--	--	10	nc	nc	nc	nc	nc
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	10	nc	nc	nc	nc	nc
ORP	mV	--	--	--	--	--	--	--	10	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	10	6.6	7.3	7.06	7.19	7.3065
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	10	12.0	17.0	14.90	16	16.55
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	10	2.5	2.5	2.50	2.5	2.5
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	10	35	45	39.50	40	43.2
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	10	26	52	40.20	40	50.2
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	10	0.5	30.0	3.95	0.75	17.4
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	10	16	21	18.04	17.8	20.2
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	10	9	13	10.70	10.1	12.92
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	10	9	13	11.00	10.55	13.02
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	10	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	10	5.1	6.5	5.60	5.465	6.305
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	10	0.86	1.2	0.98	0.9805	1.134
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	10	0.14	0.22	0.17	0.162	0.20425
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	10	0.58	0.69	0.64	0.6265	0.68435
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	10	0.14	0.29	0.24	0.245	0.2855
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	10	0.025	0.125	0.04	0.025	0.08
Sulphate (SO4)	mg/L	<0.1	--	--	500	--	--	--	10	2.3	3.3	2.71	2.605	3.237
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	10	0.024	0.05	0.04	0.037	0.05355
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	10	0.0005	0.0005	0.00	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	10	0.0015	0.0015	0.00	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	10	0.0030	0.0040	0.00	0.0035	0.004
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	10	0.00050	0.00050	0.00	0.0005	0.0005
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	10	0.0050	0.0050	0.01	0.005	0.005
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	10	0.000010	0.000010	0.00	0.00001	0.00001
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	10	0.0015	0.0015	0.00	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	10	0.00025	0.00025	0.00	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	10	0.00060	0.0012	0.00	0.0007	0.001065
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	10	0.01	0.16	0.08	0.0565	0.1536
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	10	0.00005	0.00005	0.00	0.00005	0.00005
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	10	0.005	0.030	0.01	0.014	0.02595
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	10	0.00000095	0.000007	0.00	0.00000095	0.00000615
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	10	0.0010	0.0010	0.00	0.001	0.001
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	10	0.0015	0.0015	0.00	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	10	0.000050	0.0010	0.00	0.00005	0.00064
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	10	0.0000050	0.0000100	0.00	0.000005	0.00000775
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	10	0.009	0.012	0.01	0.0105	0.012
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	10	0.0000050	0.00003	0.00	0.000005	0.0000255
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	10	0.0010	0.0010	0.00	0.001	0.001

2011-2013 Surface Water Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: ML - Moore Lake					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	10	0.0050	0.0050	0.01	0.005	0.005
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	10	0.0010	0.0010	0.00	0.001	0.001
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	10	0.0010	0.0010	0.00	0.001	0.001
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	10	0.0025	0.003	0.00	0.0025	0.0025
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	10	0.0020	0.0020	0.00	0.002	0.002
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	10	0.0000	0.0000	0.00	0.00000125	0.00000456

Notes:

nc = Not calculated

2011-2013 Surface Water Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: Location SL2					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	6	nc	nc	nc	nc	nc
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	6	nc	nc	nc	nc	nc
Conductivity	µS/cm	--	--	--	--	--	--	--	6	nc	nc	nc	nc	nc
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	6	nc	nc	nc	nc	nc
ORP	mV	--	--	--	--	--	--	--	6	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	6	7.2	7.4	7.3	7.3	7.4
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	6	12	29	22	23	29.0
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	6	2.5	2.5	2.50	2.5	2.5
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	6	36	62	50	49	61.0
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	6	44	68	56	55	67.0
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	6	0.50	2	1	0.5	1.6
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	6	18.0	31	25	25	30.4
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	6	9.7	19	13.8	12.6	18.9
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	6	9.9	19.6	14.80	14.8	19.2
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	6	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	6	5.0	9	7.0	7.0	8.4
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	6	1.3	2.4	1.8	1.8	2.3
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	6	0.03	0.22	0.12	0.11	0.2
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	6	0.68	1.63	0.89	0.74	1.4
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	6	0.15	0.38	0.23	0.22	0.4
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	6	0.025	0.025	0.025	0.025	0.0
Sulphate (SO4)	mg/L	<0.1	--	--	500	--	--	--	6	0.9	2.9	2.2	2.4	2.8
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	6	0.0880	0.155	0.122	0.115	0.154
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	6	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	6	0.0015	0.0015	0.0015	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	6	0.0030	0.005	0.0040	0.0040	0.0050
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	6	0.00050	0.00050	0.00050	0.00050	0.00050
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	6	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	6	0.000010	0.000010	0.000010	0.000010	0.000010
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	6	0.0015	0.0015	0.0015	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	6	0.00025	0.00025	0.00025	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	6	0.00050	0.0009	0.00078	0.0009	0.0009
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	6	0.1430	0.41	0.214	0.183	0.361
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	6	0.000050	0.00020	0.00008	0.00005	0.00018
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	6	0.0090	0.036	0.020	0.018	0.033
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	6	0.00000095	0.000009	0.000003	0.000002	0.000008
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	6	0.0010	0.0010	0.0010	0.0010	0.0010
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	6	0.0015	0.0015	0.0015	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	6	0.000050	0.0002	0.0001	0.0001	0.0002
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	6	0.0000050	0.000005	0.000005	0.000005	0.000005
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	6	0.011	0.020	0.015	0.015	0.019
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	6	0.0000050	0.00002	0.00001	0.00001	0.00002

2011-2013 Surface Water Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: Location SL2					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	6	0.0010	0.0010	0.0010	0.0010	0.0010
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	6	0.0050	0.0050	0.0050	0.0050	0.0050
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	6	0.0010	0.0010	0.0010	0.0010	0.0010
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	6	0.0010	0.0010	0.0010	0.0010	0.0010
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	6	0.0025	0.0025	0.003	0.0025	0.0025
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	6	0.0020	0.0020	0.0020	0.0020	0.0020
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	6	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

nc = Not calculated

2011-2013 Surface Water Baseline Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: 3D-A - Three Ducks Lakes, upper basin outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
FIELD PARAMETERS		50%												
pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	8	nc	nc	nc	nc	nc
Temperature	degrees Celsius	--	--	--	--	--	--	-0.25	8	nc	nc	nc	nc	nc
Conductivity	µS/cm	--	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
Dissolved Oxygen (DO)	mg/L	--	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
ORP	mV	--	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
GENERAL PARAMETERS														
Lab pH	pH units	--	--	--	--	6.5-8.5	6.5-9	6.5-8.5	8	6.7	7.4	7.2	7.3	7.4
Alkalinity	mg/L as CaCO3	<5	--	--	--	--	--	-25%	8	11.0	23	16	16	22.3
Acidity	mg/L as CaCO3	<5	--	--	--	--	--	--	8	2.5	2.5	2.50	2.5	2.5
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	--	--	8	34.0	55	43	43	52.2
Total Dissolved Solids (TDS)	mg/L	<20	--	--	500	--	--	--	8	30	60	47	50	57.2
Total Suspended Solids (TSS)	mg/L	<1, <10	--	--	--	--	+5-25	--	8	0.50	2.0	0.9	1.0	1.7
Total Hardness	mg/L as CaCO3	<0.5	--	--	--	--	--	--	8	16	26	19	19	24.8
Dissolved Organic Carbon (DOC)	mg/L	<0.5	--	--	5	--	--	--	8	10.3	13	12	12	13.3
Total Organic Carbon (TOC)	mg/L	<0.5	--	--	--	--	--	--	8	10.8	14.3	12.89	13.3	14.2
Chemical Oxygen Demand (COD)	mg/L	<5	--	--	--	--	--	--	8	nc	nc	nc	nc	nc
MAJOR IONS														
Calcium (Ca)	mg/L	<0.05	--	--	--	--	--	--	8	4.9	8.2	6.0	5.9	7.8
Magnesium (Mg)	mg/L	<0.05	--	--	--	--	--	--	8	0.85	1.4	1.1	1.1	1.3
Potassium (K)	mg/L	<0.05	--	--	--	--	--	--	8	0.29	0.36	0.31	0.30	0.4
Sodium (Na)	mg/L	<0.05	--	--	200	--	--	--	8	0.71	1.0	0.81	0.74	1.0
Chloride (Cl)	mg/L	<0.1	--	--	250	--	--	--	8	0.28	0.45	0.37	0.37	0.4
Fluoride (F)	mg/L	<0.05	1.5	--	--	--	--	--	8	0.025	0.025	0.0	0.025	0.0
Sulphate (SO ₄)	mg/L	<0.1	--	--	500	--	--	--	8	1.910	2.5	2.3	2.4	2.5
METALS														
Aluminum (Al) (Dissolved)	mg/L	<0.004	--	--	--	0.1	0.1	0.075	8	0.035	0.096	0.062	0.057	0.094
Antimony (Sb)	mg/L	<0.006	--	0.006	--	--	--	0.02	8	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic (As)	mg/L	<0.003	--	0.025	--	--	0.005	0.005	8	0.0015	0.0015	0.0015	0.0015	0.0015
Barium (Ba)	mg/L	<0.002	1	--	--	--	--	--	8	0.0040	0.0060	0.0048	0.0050	0.0057
Beryllium (Be)	mg/L	<0.001	--	--	--	--	--	0.011	8	0.00050	0.00050	0.00050	0.00050	0.00050
Boron (B)	mg/L	<0.01	--	5	--	--	1.5	0.2	8	0.00500	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)	mg/L	<0.0001	--	0.005	--	--	0.000058	0.0001	8	0.000010	0.000010	0.000010	0.000010	0.000010
Chromium (Cr)	mg/L	<0.003	0.05	--	--	--	0.0089	0.0089	8	0.001500	0.0015	0.0015	0.0015	0.0015
Cobalt (Co)	mg/L	<0.0005	--	--	--	--	--	0.0009	8	0.00025	0.00025	0.00025	0.00025	0.00025
Copper (Cu)	mg/L	<0.002	--	--	1	--	0.002	0.005	8	0.00100	0.0022	0.0013	0.0012	0.0019
Iron (Fe)	mg/L	<0.010	--	--	0.3	--	0.3	0.3	8	0.0790	0.25	0.16	0.13	0.24
Lead (Pb)	mg/L	<0.001	0.01	--	--	--	0.001	0.003	8	0.000050	0.00040	0.00013	0.00010	0.00033
Manganese (Mn)	mg/L	<0.002	--	--	0.05	--	--	--	8	0.00900	0.026	0.016	0.015	0.025
Mercury (Hg)	mg/L	<0.00010	0.001	--	--	--	0.000026	0.0002	8	0.00000095	0.000004	0.000001	0.000001	0.000003
Molybdenum (Mo)	mg/L	<0.002	--	--	--	--	0.073	0.04	8	0.001000	0.0010	0.0010	0.0010	0.0010
Nickel (Ni)	mg/L	<0.003	--	--	--	--	0.025	0.025	8	0.0015	0.0015	0.0015	0.0015	0.0015
Selenium (Se)	mg/L	<0.004	0.01	--	--	--	0.001	0.1	8	0.000050	0.0003	0.0001	0.0001	0.0003
Silver (Ag)	mg/L	<0.0001	--	--	--	--	0.0001	0.0001	8	0.0000050	0.000020	0.000007	0.000005	0.000015
Strontium (Sr)	mg/L	<0.005	--	--	--	--	--	--	8	0.011000	0.015	0.013	0.013	0.014
Thallium (Tl)	mg/L	<0.0003	--	--	--	--	0.0008	0.0003	8	0.0000050	0.00001	0.00001	0.00001	0.00001
Titanium (Ti)	mg/L	<0.002	--	--	--	--	--	--	8	0.00100	0.0010	0.0010	0.0010	0.0010

2011-2013 Surface Water Baseline Quality Results

Parameter	Unit	Method Detection Limit	Ontario Drinking Water Standards				Canadian Water Quality Guidelines	Provincial Water Quality Objective	BASELINE DATA SUMMARY STATISTICS: 3D-A - Three Ducks Lakes, upper basin outlet					
			MAC	IMAC	AO	OG			Number of samples	Minimum	Maximum	Average	Median	95th percentile
Tungsten (W)	mg/L	<0.01	--	--	--	--	--	0.03	8	0.0050	0.0050	0.0050	0.0050	0.0050
Uranium (U)	mg/L	<0.002	0.02	--	--	--	0.015	0.005	8	0.0010	0.0010	0.0010	0.0010	0.0010
Vanadium (V)	mg/L	<0.002	--	--	--	--	--	0.006	8	0.0010	0.0010	0.0010	0.0010	0.0010
Zinc (Zn)	mg/L	<0.005	--	--	5	--	0.03	0.02	8	0.0025	0.0050	0.0028	0.0025	0.0041
Zirconium (Zr)	mg/L	<0.004	--	--	--	--	--	0.004	8	0.0020	0.0020	0.0020	0.0020	0.0020
Mercury (Hg) (Dissolved)	mg/L	<0.0000025	0.001	--	--	--	0.000026	0.0002	8	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:

nc = Not calculated

Appendix D Baseline Groundwater Quality - Golder Associates

2012 Groundwater Quality Results																		
Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Open Pit Footprint											
							BH12-1			BH12-2A			BH12-2B			BH12-3A		
			MAC	IMAC			18-May-12	14-Aug-12	5-Dec-12	18-May-12	14-Aug-12	5-Dec-12	19-May-12	14-Aug-12	5-Dec-12	20-May-12	14-Aug-12	5-Dec-12
FIELD PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	6.33	6.71	7.66	6.02	6.49	8.6	6.41	5.96	8.86	7.53	6.32	7.87
Conductivity	µs/cm	--	--	--	--	--	396	263	272	142	192	187	105	94	187	218	238	231
Temperature	degrees Celsius	--	--	--	--	--	7.5	17.3	6.7	11.8	11.4	5.5	10.8	12.1	6.5	16.5	17	6.5
GENERAL PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.79	7.84	7.92	7.77	7.95	7.96	7.9	7.91	7.88	7.66	7.95	7.84
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	113000	135000	139000	92000	89000	92000	66000	48000	53000	115000	95000	108000
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	240	276	283	205	191	198	121	102	90	246	224	246
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	820000	131000	110000	9120000	4640000	13000000	105000000	39400000	17600000	1240000	516000	208000
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	128000	172000	160000	120000	128000	120000	320000	134000	58000	148000	144000	152000
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	105000	144000	144000	94300	106000	90100	43600	69600	39500	119000	120000	123000
MAJOR IONS																		
Calcium (Ca)	µg/L	<50	--	--	--	--	35500	49900	51600	27700	30300	25900	14000	20600	12300	41700	41800	43000
Chloride (Cl)	µg/L	<100	--	--	--	--	1920	2850	2200	720	560	670	500	630	420	1690	1570	1220
Sodium (Na)	µg/L	<50	--	--	--	--	4140	3480	1840	6970	4910	3540	9920	2390	1310	5190	3170	2340
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	120	<50	<100	50	<50	<50	60	<50	<50	120	90	<50
Magnesium (Mg)	µg/L	<50	--	--	--	--	4070	4740	3790	6100	7470	6180	2100	4420	2140	3670	3810	3760
Potassium (K)	µg/L	<50	--	--	--	--	1870	2100	1010	1190	1540	950	628	1840	500	1560	1260	690
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	7320	6810	7980	13700	13600	12200	5610	5840	5550	14100	20400	23300
METALS																		
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	34	43	20	7	8	11	14	64	22	13	15	10
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium (Ba)	µg/L	<2	1000	--	--	--	35	40	35	13	12	10	<2	3	2	17	18	16
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	23	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	3	<2	<2	<2	<2	<2	<2	<2	<2	4	2	<2
Iron (Fe)	µg/L	<10	--	--	300	300	<10	<10	<10	10	10	45	<10	<10	<10	122	<10	<10
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese (Mn)	µg/L	<2	--	--	--	--	123	107	<2	73	71	71	3	7	3	126	81	43
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	µg/L	<2	--	--	73	40	8	6	6	13	7	5	<2	<2	<2	41	73	89
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium (Sr)	µg/L	<5	--	--	--	--	82	72	59	47	40	39	27	31	23	46	40	40
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	32	13	<10	20	<10	<10	<10	<10	<10	78	55	22
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	2	2	<2	<2	<2	<2	<2	<2	<u>6</u>	<u>9</u>	<u>9</u>
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	45	54	12	5	<5	<5	7	78	<5	6	<5	<5
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
NUTRIENTS																		
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	170	--	720	<50	--	<50	90	--	<50	<50	<50	<50
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	--	<50	<50	--	<50	<50	--	<50
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	<20	<20	<20	40	40	140	220	560	790	<20	<20	20
Un-ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<u>30</u>	<20	<20	<20
NUTRIENTS																		
Free Cyanide	µg/L	<2	200	--	5	5	<2	2	<2	<2	3	<2	<2	<2	<2	<2	<2	<2
Sulphur (S)	µg/L	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Open Pit Footprint												
			BH12-3B				BH12-4			BH12-6		BH12-BULK1				DH12-PO-10			
			20-May-12	14-Aug-12			5-Dec-12	18-May-12	14-Aug-12	5-Dec-12	18-May-12		28-May-12	14-Aug-12	5-Dec-12	7-Jun-12	16-Aug-12	5-Dec-12	
FIELD PARAMETERS																			
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.46	6.69	7.68	6.45	6.67	7.9	6.9	6.63	6.5	7.78	8.08	6.28	8.06
Conductivity	µs/cm	--	--	--	--	--	107	99	127	162	133	130	134	268	279	287	273	335	282
Temperature	degrees Celsius	--	--	--	--	--	13.6	11.6	7.4	9.1	12.7	6.5	8.1	10.2	17.4	7.3	1.8	12.7	5.8
GENERAL PARAMETERS																			
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.22	7.51	7.22	7.64	7.77	7.65	7.74	7.72	7.96	7.87	7.87	7.98	7.88
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	46000	40000	61000	80000	53000	59000	83000	112000	114000	121000	147000	149000	142000
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	115	103	140	164	124	137	173	265	275	299	279	344	289
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	27800000	4330000	2430000	7050000	1760000	283000	14400000	69000	130000	120000	1310000	924000	2000000
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	172000	66000	88000	116000	84000	90000	188000	152000	176000	178000	160000	234000	188000
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	52200	51600	65400	64500	71300	61700	48400	133000	142000	150000	137000	149000	144000
MAJOR IONS																			
Calcium (Ca)	µg/L	<50	--	--	--	--	19400	18700	24400	21900	22300	20600	14500	48700	51700	55100	42100	46400	44500
Chloride (Cl)	µg/L	<100	--	--	--	--	950	1150	1790	1930	640	1290	1670	1630	1430	1500	900	2710	1760
Sodium (Na)	µg/L	<50	--	--	--	--	1740	2030	2160	10500	3380	1820	19600	3030	3160	2720	3320	19800	7700
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	60	<50	<50	110	<50	<50	70	110	90	<50	140	110	110
Magnesium (Mg)	µg/L	<50	--	--	--	--	910	1190	1080	2380	3790	2480	2950	2870	3140	3030	7720	8060	8010
Potassium (K)	µg/L	<50	--	--	--	--	380	680	260	1060	1410	550	380	1330	1520	1160	1280	1710	1400
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	10600	8140	7040	7420	8770	8390	6610	25400	29200	34000	5080	32600	11200
METALS																			
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	<u>100</u>	30	29	74	30	17	73	8	15	11	195	22	18
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	<3	<3	<3	<3	<3	<3	5	<3	<3	6	<3
Barium (Ba)	µg/L	<2	1000	--	--	--	3	2	4	13	12	11	2	25	43	36	7	38	30
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<10	<10	11	11	<10	<10	13	10	12	<10	<10	15	13
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.8	<0.5
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	4	4	5	16	3	<2	3	4	<2	3	8	3	7
Iron (Fe)	µg/L	<10	--	--	300	300	57	28	<10	58	<10	<10	25	<10	105	<10	38	<10	135
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese (Mn)	µg/L	<2	--	--	--	--	20	5	13	168	38	25	34	94	313	42	39	266	102
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1
Molybdenum (Mo)	µg/L	<2	--	--	73	40	5	5	5	3	<2	<2	<2	127	108	147	<2	48	30
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	<3	<3	<3	7	<3	3	<3	<3	9	5
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium (Sr)	µg/L	<5	--	--	--	--	28	18	29	51	29	32	16	54	63	56	42	88	82
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	2	<2	<2	2	<2	<2	2	<2	<2	<2	<2	<2	<2
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	<10	<10	<10	<u>212</u>	55	23	<u>232</u>	14	<10	<10	21	<u>91</u>	<u>54</u>
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	<2	<2	<2	<2	8	<2	<u>13</u>	<u>7</u>	<u>14</u>	<2	2	<2
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	<2
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	145	<5	41	20	<u>22</u>	10	9	9	8	<5	385	385	61
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
NUTRIENTS																			
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	<50	<50	<50	<50	120	140	130	<50	<50	120	--	170
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	--	<50	<50	<50	--	<50	<50	--	<50
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	<20	30	<20	40	<20	<20	150	<20	40	<20	<20	<20	40
Un-Ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
NUTRIENTS																			
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	<2	<2	<2	<2	5	<2	<2	<2	<2	<2
Sulphur (S)	µg/L	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1860	--	--

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Open Pit Footprint			Tailings Management Facility Footprint and Adjacent Areas								
							DH12-PO-14B			DH12-TMF-05A			DH12-TMF-05B			DH12-TMF-12		
			MAC	IMAC			28-May-12	15-Aug-12	5-Dec-12	6-Jun-12	14-Aug-01	29-Nov-12	6-Jun-12	14-Aug-12	29-Nov-12	13-Jun-12	14-Aug-12	29-Nov-12
FIELD PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.93	6.94	8.33	7.76	6.54	7.91	7.09	6.54	6.96	6.18	7.6	7.51
Conductivity	µs/cm	--	--	--	--	--	192	203	213	592	415	382	552	783	761	670	787	727
Temperature	degrees Celsius	--	--	--	--	--	8.2	10.8	4.5	9.2	11.1	--	14.9	15.5	--	9.8	9.6	--
GENERAL PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.83	8.04	7.99	7.81	8.01	7.89	7.89	7.97	7.91	7.75	7.94	7.81
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	91000	95000	106000	125000	136000	136000	232000	342000	328000	88000	87000	87000
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	189	208	225	589	385	429	486	706	764	766	748	741
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	16000000	5560000	5970000	2640000	491000	524000	5680000	344000	25800000	326000	2350000	805000
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	184000	134000	144000	378000	272000	398000	360000	554000	564000	574000	558000	468000
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	81300	113000	105000	129000	141000	143000	200000	187000	231000	340000	343000	322000
MAJOR IONS																		
Calcium (Ca)	µg/L	<50	--	--	--	--	24800	33200	31700	39000	40200	40900	53400	52100	61900	84600	86100	82300
Chloride (Cl)	µg/L	<100	--	--	--	--	2440	3480	4160	15100	6670	9090	7850	13500	13300	16300	17100	17500
Sodium (Na)	µg/L	<50	--	--	--	--	8550	7160	4070	77400	29100	39800	36300	108000	96100	36300	36500	39100
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	140	90	<50	280	760	640	<50	<50	<50	<50	<50	<50
Magnesium (Mg)	µg/L	<50	--	--	--	--	4710	7310	6330	7590	9890	9940	16300	13800	18600	31200	31200	28300
Potassium (K)	µg/L	<50	--	--	--	--	590	1310	920	4760	3820	2810	2640	3470	3050	2190	2340	2080
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	8270	9840	9560	152000	53500	75900	26500	32900	78700	300000	310000	278000
METALS																		
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	<u>94</u>	15	25	146	116	42	123	134	142	9	5	12
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Arsenic (As)	µg/L	<3	--	25	5	5	<3	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium (Ba)	µg/L	<2	1000	--	--	--	15	13	18	59	42	36	39	63	45	22	30	25
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<10	<10	<10	31	34	32	<10	20	12	40	47	48
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	4	8	9	<3	<3	<3
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	3.9	2.7	2.9	<0.5	<0.5	<0.5
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<2	<2	<2	2	2	<2	<2	<2	<2	<2	<2	<2
Iron (Fe)	µg/L	<10	--	--	300	300	32	73	89	184	<10	23	7230	12200	13800	28	164	223
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese (Mn)	µg/L	<2	--	--	--	--	56	64	62	320	201	151	553	609	731	832	832	864
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	µg/L	<2	--	--	73	40	10	5	6	179	49	16	3	5	2	4	4	5
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	5	6	<3	5	5	<3	<3	3	<3
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium (Sr)	µg/L	<5	--	--	--	--	69	65	79	292	314	319	167	224	183	523	590	578
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	<2	<2	5	2	<2	8	14	12	5	6	5
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	<u>92</u>	28	43	15	10	<10	<10	<10	<10	<10	<10	<10
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	<2	<2	5	<u>7</u>	5	<2	<2	<2	3	3	4
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	<2	<2	<2	<2	<2	<2	6	6	6	<2	<2	<2
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	153	<5	23	96	35	59	1250	11	<5	16	<5	8
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
NUTRIENTS																		
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	--	<50	<50	--	120	<50	--	<50	<50	--	<50
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	--	<50	<50	--	<50	<50	--	<50
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	270	100	130	<20	<20	70	200	350	270	<20	20	<20
Un-Ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	--	<20	<20	--	<20	<20	--
NUTRIENTS																		
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	<2	<2	<2	4	<2	<2	<2	<2	<2
Sulphur (S)	µg/L	<50	--	--	--	--	--	--	--	50400	--	--	9100	--	--	--	--	--

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Tailings Management Facility Footprint and Adjacent Areas												
			MAC	IMAC			DH12-TMF-16	DH12-TMF-27A			DH12-TMF-27B			DH12-TMF-28			DH12-TMF-31A		
							6-Jun-12	29-May-12	15-Aug-12	29-Nov-12	29-May-12	15-Aug-12	29-Nov-12	13-Jun-12	16-Aug-12	29-Nov-12	5-Jun-12	16-Aug-12	29-Nov-12
FIELD PARAMETERS																			
pH	pH units	--	--	--	6.5-9	6.5-8.5	8.16	7.74	7.49	7	7.97	7.1	7.07	<u>6.31</u>	7.53	7.55	7.93	7.37	7.74
Conductivity	µs/cm	--	--	--	--	--	126	57	94	80	62	88	99	318	469	350	229	226	226
Temperature	degrees Celsius	--	--	--	--	--	10	6.9	9.7	--	8.7	10.3	--	8.4	13.4	5	6.7	8.6	4.6
GENERAL PARAMETERS																			
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.58	7.29	7.72	7.43	7.16	7.5	7.49	7.8	7.93	7.82	7.86	8.03	7.98
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	64000	41000	55000	43000	33000	40000	41000	99000	94000	99000	123000	116000	117000
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	136	149	138	101	91	94	93	346	401	358	241	233	240
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	1250000	2900000	3810000	598000	7420000	11000000	2330000	548000	304000	138000	578000	648000	797000
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	86000	66000	80000	74000	70000	102000	66000	220000	308000	222000	134000	146000	282000
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	62800	40300	58400	46200	32200	43300	40800	145000	169000	153000	121000	124000	127000
MAJOR IONS																			
Calcium (Ca)	µg/L	<50	--	--	--	--	17400	9750	14300	11000	6120	7850	7850	39300	45300	41200	43000	43800	45500
Chloride (Cl)	µg/L	<100	--	--	--	--	420	350	480	600	440	440	350	5370	7110	5410	510	500	550
Sodium (Na)	µg/L	<50	--	--	--	--	2040	1640	3190	2250	2090	2700	2260	19100	23300	16000	1390	1410	1410
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	70	90	120	70	80	<50	<50	580	970	830	<50	<50	<50
Magnesium (Mg)	µg/L	<50	--	--	--	--	4690	3870	5520	4540	4100	5750	5150	11500	13500	12100	3430	3660	3210
Potassium (K)	µg/L	<50	--	--	--	--	430	410	730	470	450	600	400	1210	1670	1120	470	640	300
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	5910	4460	5750	6840	4630	5150	5230	70100	102000	75800	8320	8650	8880
METALS																			
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	<u>184</u>	14	10	52	39	20	25	17	45	9	27	38	13
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium (Ba)	µg/L	<2	1000	--	--	--	6	<2	5	6	2	2	2	29	57	37	7	5	5
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<10	<10	<10	<10	<10	<10	<10	18	19	12	<10	<10	<10
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	<0.1	<u>0.1</u>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<u>6</u>	<2	2	3	<2	<2	<2	<2	<2	<2	<2	<2	<2
Iron (Fe)	µg/L	<10	--	--	300	300	20	<10	<10	15	<10	<10	<10	297	168	256	<10	<10	<10
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese (Mn)	µg/L	<2	--	--	--	--	17	12	27	31	7	2	<2	284	462	433	8	6	4
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.10	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1
Molybdenum (Mo)	µg/L	<2	--	--	73	40	<2	<2	<2	<2	<2	<2	<2	9	6	3	<2	<2	<2
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<u>0.2</u>	<u>0.2</u>	<0.1	<u>0.2</u>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<u>0.2</u>	<0.1	<0.1
Strontium (Sr)	µg/L	<5	--	--	--	--	34	14	25	27	16	19	22	81	112	85	29	38	33
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	<2	<2	3	<2	<2	<2	<2	3	<2	<2	<2	<2
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	<u>74</u>	<u>38</u>	<u>42</u>	13	<10	<10	<10	27	20	<10	22	12	<10
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	<2	<2	<2	<2	<2	<2	3	5	5	<2	<2	<2
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	<u>353</u>	<5	<5	<5	<u>22</u>	<5	8	5	<u>69</u>	<5	10	<u>53</u>	20
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
NUTRIENTS																			
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	410	<50	--	<50	<50	--	70	<50	--	<50	<50	--	210
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	<50	--	<50	<50	--	<50	<50	--	<50	<50	--	<50
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	<20	<20	60	30	<20	60	30	<20	<20	<20	<20	<20	40
Un-ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	--	<20	<20	--	<20	<20	<20	<20	<20	<20
NUTRIENTS																			
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	5	<2	<2
Sulphur (S)	µg/L	<50	--	--	--	--	2040	1520	--	--	1580	--	--	--	--	--	2830	--	--

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Tailings Management Facility Footprint and Adjacent Areas									North of Tailings Management Facility				
							DH12-TMF-31B			DH12-TMF-32A		DH12-TMF-32B			DH12-TMF-23A		DH12-TMF-23B			
			MAC	IMAC			5-Jun-12	16-Aug-12	29-Nov-12	15-Aug-12	29-Nov-12	28-May-12	15-Aug-12	29-Nov-12	5-Jun-12	15-Aug-12	5-Jun-12	15-Aug-12	29-Nov-12	
FIELD PARAMETERS																				
pH	pH units	--	--	--	6.5-9	6.5-8.5	8.02	--	7.44	7.53	8.01	8.5	6.9	7.06	7.99	6.97	8.3	6.75	7.14	
Conductivity	µs/cm	--	--	--	--	--	133	--	95	302	303	122	120	132	157	172	107	99	88	
Temperature	degrees Celsius	--	--	--	--	--	6.7	--	4.6	13.8	5	8.06	13.5	5.7	8.3	10.6	6.4	10	6.5	
GENERAL PARAMETERS																				
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.65	7.83	7.58	7.95	8.05	7.22	7.58	7.47	7.78	7.85	7.58	7.78	7.54	
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	74000	83000	46000	132000	136000	55000	52000	65000	102000	73000	58000	53000	52000	
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	160	183	115	295	304	126	126	146	260	175	121	117	113	
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	22800000	12900000	2830000	1140000	953000	1380000	4500000	785000	286000	418000	6820000	1140000	1550000	
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	116000	138000	214000	208000	168000	74000	92000	86000	110000	124000	114000	88000	68000	
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	76400	95000	51500	129000	142000	55500	60500	70900	76600	76400	50000	58400	52700	
MAJOR IONS																				
Calcium (Ca)	µg/L	<50	--	--	--	--	29000	35000	19100	41500	46100	20600	22300	26300	22600	22300	16000	18800	17100	
Chloride (Cl)	µg/L	<100	--	--	--	--	520	530	1170	1270	1190	530	540	530	3590	2730	390	470	460	
Sodium (Na)	µg/L	<50	--	--	--	--	1150	1560	1270	13700	11600	1330	1570	1310	5370	7700	4830	2700	2220	
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	<50	<50	<50	392	380	<50	<50	<50	160	160	120	<50	<50	
Magnesium (Mg)	µg/L	<50	--	--	--	--	980	1840	920	6140	6440	990	1170	1260	4890	5040	2450	2780	2440	
Potassium (K)	µg/L	<50	--	--	--	--	340	1580	80	1770	1610	430	460	240	1340	1280	300	660	170	
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	7540	8990	8070	22100	24200	5930	6690	7470	7450	11800	4220	5200	3580	
METALS																				
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	38	43	68	35	37	180	31	6	21	29	68	25	12	
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	6	<6	<6	<6	<6	<6	<6	<6	<6	
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	<3	16	179	<3	<3	<3	<3	<3	<3	<3	<3	
Barium (Ba)	µg/L	<2	1000	--	--	--	5	3	2	20	34	5	3	3	8	27	5	4	3	
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<10	<10	<10	119	149	<10	<10	<10	12	14	<10	<10	<10	
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<2	<2	<2	<2	<2	15	<2	<2	<2	<2	<2	<2	<2	
Iron (Fe)	µg/L	<10	--	--	300	300	<10	40	51	<10	<10	18	<10	<10	<10	140	13	<10	<10	
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Manganese (Mn)	µg/L	<2	--	--	--	--	39	66	14	130	15	116	76	8	92	155	25	15	5	
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.10	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	<0.10	<0.1	<0.1	
Molybdenum (Mo)	µg/L	<2	--	--	73	40	<2	<2	<2	12	15	<2	<2	<2	<2	2	<2	<2	<2	
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Strontium (Sr)	µg/L	<5	--	--	--	--	36	47	27	115	134	36	31	32	109	134	26	24	21	
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	<10	<10	<10	31	<10	<10	<10	<10	<10	15	<10	<10	<10	
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	<2	<2	<2	<2	<2	<2	<2	21	19	<2	<2	<2	
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	<5	5	<5	<5	12	316	48	<5	36	<5	109	38	<5	
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
NUTRIENTS																				
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	--	80	190	200	610	--	450	80	--	<50	--	<50	
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	<50	<50	--	<50	<50	--	<50	--	<50	
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	<20	<20	40	40	60	<20	30	20	<20	<20	<20	<20	<20	
Un-Ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
NUTRIENTS																				
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	<2	<2	7	<2	<2	<2	<2	3	<2	<2	
Sulphur (S)	µg/L	<50	--	--	--	--	2650	--	--	--	--	2070	--	--	2610	--	1510	--	--	

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Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	North of Tailings Management Facility						North of Open Pit			Adjacent to Mine Rock Area		
							DH12-TMF-24A			DH12-TMF-24B			DH12-WD-01			DH12-WD-12A		
			MAC	IMAC			6-Jun-12	14-Aug-12	29-Nov-12	6-Jun-12	14-Aug-12	29-Nov-12	7-Jun-12	15-Aug-12	5-Dec-12	4-Jun-12	16-Aug-12	
FIELD PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	<u>6.48</u>	6.87	7.51	6.95	<u>6.16</u>	<u>6.11</u>	7.64	<u>5.5</u>	7.78	<u>6.14</u>	7.14	
Conductivity	µs/cm	--	--	--	--	--	527	568	787	69	63	68	--	135	76	470	810	
Temperature	degrees Celsius	--	--	--	--	--	8.4	12.1	5.2	8.1	10.1	5	8.1	14.6	6.2	5.3	10.5	
GENERAL PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.33	7.88	7.68	6.7	6.96	6.77	7.4	7.42	6.94	7.85	8	
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	128000	200000	208000	17000	21000	21000	74000	65000	30000	133000	136000	
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	524	700	724	58	51	54	163	145	87	379	507	
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	<u>1760000</u>	<u>950000</u>	<u>1470000</u>	<u>26200000</u>	<u>4470000</u>	<u>6440000</u>	<u>1350000</u>	<u>160000</u>	<u>38000</u>	<u>175000</u>	<u>82000</u>	
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	374000	454000	562000	162000	158000	76000	104000	104000	52000	380000	722000	
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	180000	267000	175000	16100	20300	20300	70700	64400	36500	131000	148000	
MAJOR IONS																		
Calcium (Ca)	µg/L	<50	--	--	--	--	61500	91800	61400	4340	5500	5540	23000	22100	12400	41700	46900	
Chloride (Cl)	µg/L	<100	--	--	--	--	56600	75300	59600	900	460	830	820	600	710	3900	5390	
Sodium (Na)	µg/L	<50	--	--	--	--	36100	38300	85500	1940	1930	1880	3630	4900	2170	27200	55200	
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	<50	<50	<50	<50	<50	<50	150	<50	<50	<50	<50	
Magnesium (Mg)	µg/L	<50	--	--	--	--	6390	9110	5210	1290	1590	1560	3220	2240	1340	6540	7420	
Potassium (K)	µg/L	<50	--	--	--	--	3440	2940	2860	580	600	740	870	780	450	1420	1580	
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	26900	17600	55800	2710	2540	3130	9290	10400	11000	60400	121000	
METALS																		
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	<u>106</u>	40	47	<u>159</u>	<u>154</u>	<u>133</u>	<u>122</u>	37	47	13	5	
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	4	<3	<3	<3	<3	<3	<3	<3	<3	
Barium (Ba)	µg/L	<2	1000	--	--	--	137	78	63	8	9	9	23	7	6	11	10	
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<u>219</u>	69	78	<10	<10	<10	<10	<10	<10	<10	<10	
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<u>0.2</u>	<0.1	<0.1	<0.1	<0.1	
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<u>2.6</u>	0.8	<0.5	0.7	0.5	0.6	0.8	<u>1.5</u>	0.8	<0.5	<0.5	
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<2	<2	<2	<2	<2	<2	<u>7</u>	<u>3</u>	<u>9</u>	<2	<2	
Iron (Fe)	µg/L	<10	--	--	300	300	<u>1950</u>	<u>549</u>	<u>816</u>	<u>7790</u>	<u>5580</u>	<u>7730</u>	45	<u>836</u>	24	11	<10	
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Manganese (Mn)	µg/L	<2	--	--	--	--	485	385	295	146	125	132	161	300	54	16	17	
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	
Molybdenum (Mo)	µg/L	<2	--	--	73	40	3	3	<2	<2	<2	<2	33	<2	<2	<2	<2	
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	11	5	<3	<3	<3	<3	5	<3	<3	<3	<3	
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Strontium (Sr)	µg/L	<5	--	--	--	--	866	998	886	38	35	36	80	48	25	65	71	
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	<2	<2	4	9	4	<2	<2	<2	<2	<2	
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	<10	<10	13	<10	<10	<10	<u>107</u>	25	<10	26	10	
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	5	<2	<2	<2	<2	<2	<2	<2	2	2	
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	<2	2	<2	<u>16</u>	6	<u>18</u>	2	<2	<2	<2	<2	
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	<u>447</u>	<5	<5	<u>81</u>	5	14	<u>864</u>	<5	9	<u>39</u>	6	
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
NUTRIENTS																		
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	--	<50	100	--	<50	60	--	<50	<50	--	
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	--	<50	<50	--	<50	<50	--	
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	<20	30	40	60	30	50	<20	<20	<20	<20	<20	
Un-ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
NUTRIENTS																		
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	<2	<2	<2	<u>6</u>	<2	<2	<2	<2	
Sulphur (S)	µg/L	<50	--	--	--	--	9370	--	--	900	--	--	3220	--	--	19200	--	

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Adjacent to Mine Rock Area									West of Open Pit		
							DH12-WD-12B		DH12-WD-14			DH12-WD-17A			DH12-WD-19			
			MAC	IMAC			4-Jun-12	16-Aug-12	4-Jun-12	14-Aug-12	5-Dec-12	5-Jun-12	15-Aug-12	5-Dec-12	4-Jun-12	15-Aug-12	5-Dec-12	
FIELD PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.09	7.08	7.85	7.12	8.05	8.44	6.04	8.02	7.65	7.22	7.63	
Conductivity	µs/cm	--	--	--	--	--	227	229	228	206	206	236	312	351	405	373	441	
Temperature	degrees Celsius	--	--	--	--	--	4.9	10	10.1	11.2	7.4	10.1	9	--	9.7	13.2	6.6	
GENERAL PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.84	8.08	7.76	7.99	7.85	7.73	7.95	8.02	7.89	8.01	8.06	
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	119000	120000	111000	103000	101000	109000	114000	133000	213000	198000	209000	
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	240	249	227	215	215	308	303	362	410	378	430	
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	40000	100000	223000	256000	112000	38000	592000	102000	266000	187000	793000	
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	146000	172000	130000	138000	116000	146000	240000	208000	236000	244000	542000	
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	104000	129000	98600	104000	98900	93200	104000	107000	206000	205000	189000	
MAJOR IONS																		
Calcium (Ca)	µg/L	<50	--	--	--	--	32400	40100	31900	33800	32100	29300	32200	32600	66100	66300	62300	
Chloride (Cl)	µg/L	<100	--	--	--	--	900	870	1040	940	1060	10800	13000	21300	1890	960	3260	
Sodium (Na)	µg/L	<50	--	--	--	--	4640	4630	6500	6290	6010	26900	24800	35700	4660	3850	24600	
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	<50	<50	140	<50	100	<50	<50	<50	<50	<50	<50	
Magnesium (Mg)	µg/L	<50	--	--	--	--	5550	6940	4590	4810	4550	4860	5660	6330	10000	9700	8240	
Potassium (K)	µg/L	<50	--	--	--	--	1520	1700	1220	1190	1060	1020	1370	1170	1650	1720	1770	
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	10200	13600	9890	10900	10700	32700	24200	26600	12400	11100	29000	
METALS																		
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	21	8	13	7	10	63	25	13	18	13	14	
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Barium (Ba)	µg/L	<2	1000	--	--	--	14	13	22	10	17	35	77	50	23	29	41	
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<10	<10	16	20	22	11	14	27	<10	<10	12	
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<2	2	<2	<2	<2	2	4	3	<2	<2	<2	
Iron (Fe)	µg/L	<10	--	--	300	300	79	32	<10	<10	57	39	<10	16	<10	<10	52	
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Manganese (Mn)	µg/L	<2	--	--	--	--	61	58	46	17	59	85	98	113	96	101	181	
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.10	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	
Molybdenum (Mo)	µg/L	<2	--	--	73	40	3	2	7	6	8	13	11	7	<2	<2	<2	
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	<3	<3	<3	7	13	<3	3	<3	
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Strontium (Sr)	µg/L	<5	--	--	--	--	47	50	57	58	65	51	54	89	142	149	151	
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	<u>426</u>	<u>259</u>	28	12	<u>34</u>	<u>677</u>	<u>647</u>	<u>42</u>	<10	<10	20	
Uranium (U)	µg/L	<2, <4	20	--	15	5	3	3	4	4	3	<2	<2	2	<2	<2	4	
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	<u>27</u>	8	<u>32</u>	12	<5	<u>262</u>	<u>142</u>	17	19	<5	8	
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
NUTRIENTS																		
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	--	<50	--	<50	190	--	<50	<50	--	<50	
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	--	<50	<50	--	<50	<50	--	<50	
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	<20	<20	<20	<20	40	<20	20	50	<20	<20	50	
Un-Ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
NUTRIENTS																		
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Sulphur (S)	µg/L	<50	--	--	--	--	3200	--	3280	--	--	10700	--	--	4190	--	--	

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	Adjacent to Mine Rock Area			North of Open Pit								
							DH12-WD-23			DH12-WD-01			DH12-WD-25A			DH12-WD-25B		
			MAC	IMAC			5-Jun-12	15-Aug-12	5-Dec-12	7-Jun-12	15-Aug-12	5-Dec-12	13-Jun-12	16-Aug-12	5-Dec-12	13-Jun-12	16-Aug-12	5-Dec-12
FIELD PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.65	5.87	6.97	7.64	5.5	7.78	6.68	6.05	7.42	6.4	5.8	7.3
Conductivity	µs/cm	--	--	--	--	--	339	308	330	--	135	76	163	167	152	214	254	266
Temperature	degrees Celsius	--	--	--	--	--	1.6	11.6	6	8.1	14.6	6.2	8.3	10.1	4.8	8.4	10.8	5
GENERAL PARAMETERS																		
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.93	8.05	7.96	7.4	7.42	6.94	7.53	7.64	7.31	7.7	7.79	7.68
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	181000	168000	167000	74000	65000	30000	81000	70000	70000	118000	135000	132000
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	331	305	313	163	145	87	180	154	150	226	256	253
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	1910000	2140000	15000000	1350000	160000	38000	624000	736000	211000	19500000	4660000	5770000
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	206000	202000	208000	104000	104000	52000	114000	98000	102000	154000	<20000	178000
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	185000	183000	173000	70700	64400	36500	81900	81900	74100	123000	135000	128000
MAJOR IONS																		
Calcium (Ca)	µg/L	<50	--	--	--	--	59900	58400	56100	23000	22100	12400	25300	25000	23000	41100	44800	42800
Chloride (Cl)	µg/L	<100	--	--	--	--	670	520	810	820	600	710	590	550	760	690	670	810
Sodium (Na)	µg/L	<50	--	--	--	--	2170	2400	2040	3630	4900	2170	1680	1590	1490	4520	6610	4790
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	<50	<50	<50	150	<50	<50	<50	<50	<50	<50	<50	<50
Magnesium (Mg)	µg/L	<50	--	--	--	--	8560	8960	7930	3220	2240	1340	4550	4730	4050	4900	5700	5010
Potassium (K)	µg/L	<50	--	--	--	--	1910	2160	2010	870	780	450	860	940	470	770	640	590
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	100	100	100	9290	10400	11000	8410	8170	6730	5210	770	1570
METALS																		
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	23	9	20	122	37	47	31	24	31	209	43	20
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Arsenic (As)	µg/L	<3	--	25	5	5	<3	<3	<3	<3	<3	<3	8	14	11	6	4	4
Barium (Ba)	µg/L	<2	1000	--	--	--	27	27	30	23	7	6	5	7	7	17	26	23
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	0.8	1.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<2	<2	<2	7	3	9	<2	<2	<2	<2	<2	<2
Iron (Fe)	µg/L	<10	--	--	300	300	1430	1510	1900	45	836	24	4400	4200	4360	3440	3210	4540
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese (Mn)	µg/L	<2	--	--	--	--	166	156	191	161	300	54	268	300	287	390	366	431
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	µg/L	<2	--	--	73	40	8	2	4	33	<2	<2	<2	<2	<2	<2	<2	<2
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	5	<3	<3	<3	<3	<3	<3	<3	<3
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium (Sr)	µg/L	<5	--	--	--	--	58	56	60	80	48	25	46	48	49	60	70	74
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	11	<2	<2
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	21	<10	<10	107	25	<10	<10	<10	<10	<10	<10	<10
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	2	<2	2	2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	37	<5	<5	864	<5	9	10	11	<5	16	24	<5
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
NUTRIENTS																		
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	--	<50	60	--	<50	<50	--	<50	<50	--	<50
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	--	<50	<50	--	<50	<50	--	<50
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	80	70	280	<20	<20	<20	<20	40	60	170	360	200
Un-Ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
NUTRIENTS																		
Free Cyanide	µg/L	<2	200	--	5	5	<2	<2	<2	6	<2	<2	<2	2	<2	<2	2	<2
Sulphur (S)	µg/L	<50	--	--	--	--	140	--	--	3220	--	--	--	--	--	--	--	--

2012 Groundwater Quality Results

Parameter ⁽¹⁾	Unit	Method Detection Limit	Ontario Drinking Water Standards ⁽¹⁾⁽²⁾		Canadian Water Quality Guidelines ⁽⁴⁾	Provincial Water Quality Objective ⁽⁵⁾	North of Open Pit			West of Open Pit					
							DH12-WD-26			DH12-WD-27A			DH12-WD-27B		
			MAC	IMAC			13-Jun-12	15-Aug-12	5-Dec-12	4-Jun-12	15-Aug-12	5-Dec-12	4-Jun-12	15-Aug-12	5-Dec-12
FIELD PARAMETERS															
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.43	7.1	7.58	7.61	6.61	8.08	7.43	6.97	7.97
Conductivity	µs/cm	--	--	--	--	--	389	315	299	289	252	237	239	273	272
Temperature	degrees Celsius	--	--	--	--	--	8.9	13.6	6.3	9	9.5	4.8	8.2	8.7	4.8
GENERAL PARAMETERS															
pH	pH units	--	--	--	6.5-9	6.5-8.5	7.83	7.78	7.84	7.87	8.08	7.94	7.85	8.13	8.01
Alkalinity	µg/L as CaCO3	<5000	--	--	--	-25%	135000	145000	150000	152000	122000	120000	125000	136000	134000
Acidity	µg/L as CaCO3	<5000	--	--	--	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000
Electrical Conductivity (EC)	µS/cm	<2	--	--	--	--	372	331	306	294	248	246	259	271	272
Total Suspended Solids (TSS)	µg/L	<10000	--	--	+5000-25000 ⁽⁶⁾	--	602000	104000	41000	2700000	1210000	312000	6100000	3960000	2180000
Total Dissolved Solids (TDS)	µg/L	<20000	--	--	--	--	270000	216000	208000	170000	160000	148000	152000	176000	608000
Total Hardness	µg/L as CaCO3	<500	--	--	--	--	112000	121000	94900	146000	136000	117000	114000	157000	136000
MAJOR IONS															
Calcium (Ca)	µg/L	<50	--	--	--	--	37700	40100	32100	42200	39000	33700	33100	45200	39400
Chloride (Cl)	µg/L	<100	--	--	--	--	3420	2850	2740	800	680	710	800	710	860
Sodium (Na)	µg/L	<50	--	--	--	--	46100	30000	29600	2930	4660	4250	8120	3110	2600
Fluoride (F)	µg/L	<50, <100, <50000	1500 ⁽⁷⁾	--	--	--	300	290	250	<50	100	110	170	<50	<50
Magnesium (Mg)	µg/L	<50	--	--	--	--	4340	5030	3590	9850	9490	7980	7630	10700	9080
Potassium (K)	µg/L	<50	--	--	--	--	990	1220	820	1130	1230	910	1070	1230	960
Sulphate (SO ₄)	µg/L	<100	--	--	--	--	59200	24400	9910	12100	12800	12600	14200	12700	12200
METALS															
Aluminum (Al)	µg/L	<4	--	--	100 ⁽⁸⁾	75 ⁽⁹⁾	9	9	15	15	21	7	154	102	8
Antimony (Sb)	µg/L	<6	--	6	--	20	<6	<6	<6	<6	<6	<6	<6	<6	<6
Arsenic (As)	µg/L	<3	--	25	5	5	5	4	4	<3	<3	<3	<3	<3	<3
Barium (Ba)	µg/L	<2	1000	--	--	--	14	15	17	15	16	21	17	16	14
Beryllium (Be)	µg/L	<1	--	--	--	11 ⁽¹⁰⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	µg/L	<10	--	5000	1500 ⁽¹¹⁾	200	13	12	17	<10	<10	10	<10	<10	<10
Cadmium (Cd)	µg/L	<0.1	--	5	0.058 ⁽¹²⁾	0.1 ⁽¹³⁾	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<3	50	--	8.9 ⁽¹⁴⁾	8.9 ⁽¹⁴⁾	<3	<3	<3	<3	<3	<3	<3	<3	<3
Cobalt (Co)	µg/L	<0.5	--	--	--	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper (Cu)	µg/L	<2	--	--	2 ⁽¹⁵⁾	5 ⁽¹⁶⁾	<2	<2	<2	<2	<2	<2	5	<2	<2
Iron (Fe)	µg/L	<10	--	--	300	300	1280	1440	1340	89	<10	<10	154	61	28
Lead (Pb)	µg/L	<1	10 ⁽¹⁷⁾	--	1 ⁽¹⁸⁾	3 ⁽¹⁹⁾	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese (Mn)	µg/L	<2	--	--	--	--	263	279	257	47	57	53	63	36	16
Mercury (Hg)	µg/L	<0.10	1	--	0.026	0.2	<0.1	<0.1	<0.1	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1
Molybdenum (Mo)	µg/L	<2	--	--	73	40	12	6	8	<2	<2	<2	<2	<2	<2
Nickel (Ni)	µg/L	<3	--	--	25 ⁽²⁰⁾	25	<3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium (Se)	µg/L	<4	10	--	1	100	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver (Ag)	µg/L	<0.1	--	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium (Sr)	µg/L	<5	--	--	--	--	73	83	66	52	87	144	75	60	54
Thallium (Tl)	µg/L	<0.3, <4	--	--	0.8	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	µg/L	<0.1, <2	--	--	--	--	2	<2	<2	<2	<2	<2	5	<2	<2
Tungsten (W)	µg/L	<0.1, <10	--	--	--	30	29	14	11	<10	<10	<10	<10	<10	<10
Uranium (U)	µg/L	<2, <4	20	--	15	5	<2	<2	<2	<2	<2	<2	<2	3	2
Vanadium (V)	µg/L	<0.1, <2	--	--	--	6	3	3	3	<2	<2	<2	<2	<2	<2
Zinc (Zn)	µg/L	<4, <5	--	--	30	20	227	<5	<5	6	28	<5	21	166	<5
Zirconium (Zr)	µg/L	<0.1, <4	--	--	--	4	<4	<4	<4	<4	<4	<4	<4	<4	<4
NUTRIENTS															
Nitrate (NO ₃ ⁻)	µg/L as N	<50	10000	--	13000 ⁽²¹⁾	--	<50	--	<50	<50	--	<50	<50	--	<50
Nitrite (NO ₂ ⁻)	µg/L as N	<50	1000	--	60 ⁽²²⁾	--	<50	--	<50	<50	--	<50	<50	--	<50
Total Ammonia (NH ₃ + NH ₄)	µg/L as N	<20	--	--	6980	--	80	20	110	<20	60	110	120	20	40
Un-ionized Ammonia	µg/L as N	<20	--	--	19 ⁽²³⁾	20 ⁽²³⁾	<20	<20	<20	<20	<20	<20	<20	<20	<20
NUTRIENTS															
Free Cyanide	µg/L	<2	200	--	5	5	<2	2	<2	<2	<2	<2	<2	<2	<2
Sulphur (S)	µg/L	<50	--	--	--	--	--	--	--	4080	--	--	4820	--	--

NOTES ON COMPARISONS TO WATER QUALITY STANDARDS AND GUIDELINES:

- Values in GREY exceed the ODWSs MACs or IMACs
- Values in ***bold italics*** exceed the CCME CWQGs
- Values underlined exceed the PWQOs
- indicates no value available

NOTES ON WATER QUALITY STANDARDS AND GUIDELINES:

- (1) Total concentrations are assumed, unless stated otherwise.
- (2) Ontario Regulation (O.Reg.) 169/03: Ontario Drinking Water Standards (ODWS). Last amendment: O.Reg. 327/08.
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_030169_e.htm.
- (3) MAC: Maximum Acceptable Concentration; IMAC: Interim Maximum Acceptable Concentration
- (4) Canadian Council of Ministers of the Environment (CCME), Canadian Water Quality Guidelines (CWQGs) for the Protection of Aquatic Life, Update 7.1 (December 2007).
- (5) Provincial Water Quality Objectives, Ministry of Environment and Energy (1994, Revised 1999).
- (6) TSS (CWQG) Under clear flow: + 25 mg/L from background levels for any short-term exposure (e.g., 24-h period).
average + 5 mg/L from background levels for longer term exposures (24 h<discharge<30 d).
TSS (CWQG) Under high flow: + 25 mg/L from background levels at any time when background levels between 25 and 250 mg/L.
+ 10% of background levels when background is >250 mg/L.
- (7) Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.
- (8) Aluminium guideline (CWQG) is calculated assuming a pH of 7.0.
- (9) Aluminium guideline (PWQO) is calculated assuming a pH of 7.0.
- (10) Beryllium guideline (PWQO) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (11) Boron guideline (CWQG) is based on long-term exposure.
- (12) Cadmium guideline (CWQG) is based on the Draft Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life: Cadmium, October 2012, and calculated using an assumed hardness of 30 mg/L as CaCO₃.
- (13) Cadmium guideline (PWQO) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (14) No guidelines for total chromium. Guidelines for trivalent chromium used: CWQG and PWQO guidelines for Cr(III) are both 8.9 µg/L.
- (15) Copper guideline (CWQG) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (16) Copper guideline (PWQO) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (17) This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.
- (18) Lead guideline (CWQG) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (19) Lead guideline (PWQO) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (20) Nickel guideline (CCME) is calculated assuming a hardness of 30 mg/L as CaCO₃.
- (21) For protection from direct toxic effects, the guidelines do not consider indirect effects due to eutrophication.
- (22) Guideline is expressed as µg nitrite-nitrogen/L. This value is equivalent to 197 µg nitrite/L.
- (23) Un-ionized ammonia is calculated using the equation: f = 1/(10^{pKa-pH} +1), where f is the fraction of NH₃; pKa = 0.09018 + 2729.92/T; T = ambient water temperature in Kelvin (K = °C + 273.16) (Emerson et al., 1975)

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	BH12-1 (n=4)								BH12-2A (n=4)								BH12-2B (n=4)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.80	8.00	7.90	0.07	7.80	7.90	7.90	8.00	7.80	8.00	7.90	0.10	7.90	8.00	8.00	8.00	7.90	7.90	7.90	0.01	7.90	7.90	7.90	7.90
Alkalinity	mg/L as CaCO ₃	110	200	150	34	130	140	160	190	88	92	90	1.8	89	91	92	92	48	66	56	6.6	52	55	59	65
Electrical Conductivity (EC)	µS/cm	240	420	300	67	270	280	320	400	190	210	200	5.8	190	190	200	200	90	120	110	13	99	110	120	120
Total Dissolved Solids (TDS)	mg/L	130	250	180	43	150	170	190	230	120	150	130	11	120	120	130	150	58	320	170	95	120	150	210	300
Total Suspended Solids (TSS)	mg/L as CaCO ₃	47	820	280	320	94	120	300	720	970	13000	6900	4500	3700	6900	10000	12000	18000	110000	62000	35000	34000	63000	91000	100000
Total Hardness	mg/L as CaCO ₃	110	200	150	35	130	140	160	190	90	110	98	6	93	97	100	110	40	70	53	12	43	51	61	68
MAJOR IONS																									
Calcium (Ca)	mg/L	36	73	53	13	46	51	57	70	26	30	28	1.6	27	28	29	30	12	21	16	3.3	14	16	19	20
Magnesium (Mg)	mg/L	3.8	4.8	4.3	0.43	4.0	4.4	4.8	4.8	6.1	7.5	6.7	0.59	6.2	6.6	7.2	7.4	2.1	4.4	3	0.95	2.1	2.7	3.5	4.2
Potassium (K)	mg/L	0.91	2.1	1.5	0.52	0.98	1.4	1.9	2.1	0.95	1.5	1.2	0.24	0.97	1.1	1.3	1.5	0.5	1.8	0.91	0.54	0.6	0.64	0.96	1.7
Sodium (Na)	mg/L	1.6	4.1	2.8	1.1	1.8	2.7	3.6	4	2.8	7	4.6	1.6	3.4	4.2	5.4	6.7	1.3	9.9	3.8	3.5	1.6	2	4.3	8.8
Chloride (Cl)	mg/L	1.2	2.9	2	0.6	1.7	2.1	2.4	2.8	0.46	0.72	0.60	0.10	0.54	0.62	0.68	0.71	0.42	1	0.64	0.22	0.48	0.57	0.72	0.94
Fluoride (F)	mg/L	<0.05	0.12	0.055	0.039	0.025	0.038	0.068	0.11	0.025	0.05	0.031	0.011	0.025	0.025	0.031	0.046	0.025	0.06	0.034	0.015	0.025	0.025	0.034	0.055
Sulphate (SO ₄)	mg/L	6.4	8	7.1	0.58	6.7	7.1	7.5	7.9	12	14	13	0.6	13	14	14	14	5.2	5.8	5.6	0.23	5.5	5.6	5.7	5.8
METALS																									
Aluminum (Al)	mg/L	0.005	0.043	0.026	0.014	0.016	0.027	0.036	0.042	0.007	0.012	0.0095	0.0021	0.0078	0.0095	0.011	0.012	0.012	0.064	0.028	0.021	0.014	0.018	0.033	0.058
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.014	0.021	0.0015	0.0015	0.014	0.043	0.0015	0.05	0.014	0.021	0.0015	0.0015	0.014	0.043	0.0015	0.05	0.014	0.021	0.0015	0.0015	0.014	0.043
Barium (Ba)	mg/L	0.035	0.04	0.037	0.0021	0.035	0.037	0.039	0.04	0.008	0.013	0.011	0.0019	0.0095	0.011	0.012	0.013	0.001	0.003	0.0016	0.00082	0.001	0.0013	0.0019	0.0028
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.005	0.023	0.0095	0.0078	0.005	0.005	0.0095	0.02	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	<0.00002	<0.0001	0.00004	0.000017	0.00004	0.00005	0.00005	0.00005	0.00001	0.00005	0.00004	0.000017	0.00004	0.00005	0.00005	0.00005	0.00001	0.00005	0.00004	0.000017	0.00004	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0009	0.003	0.0015	0.00088	0.00098	0.001	0.0015	0.0027	0.0003	0.001	0.00083	0.0003	0.00083	0.001	0.001	0.001	0.0002	0.001	0.0008	0.00035	0.0008	0.001	0.001	0.001
Iron (Fe)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.01	0.12	0.046	0.045	0.01	0.028	0.064	0.11	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Lead (Pb)	mg/L	0.00005	0.0005	0.00039	0.00019	0.00039	0.0005	0.0005	0.0005	0.00005	0.0005	0.00039	0.00019	0.00039	0.0005	0.0005	0.0005	0.00005	0.0005	0.00039	0.00019	0.00039	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.001	0.12	0.059	0.057	0.0033	0.056	0.11	0.12	0.057	0.073	0.068	0.0064	0.068	0.071	0.072	0.073	0.002	0.007	0.0038	0.0019	0.0028	0.003	0.004	0.0064
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000038	0.000021	0.000038	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000038	0.000021	0.000038	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000038	0.000021	0.000038	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	0.003	0.008	0.0058	0.0018	0.0053	0.006	0.0065	0.0077	0.003	0.013	0.007	0.0037	0.0045	0.006	0.0085	0.012	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	0.0015	0.003	0.0019	0.00065	0.0015	0.0015	0.0019	0.0028	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.002	0.05	0.014	0.021	0.002	0.002	0.014	0.043	0.002	0.05	0.014	0.021	0.002	0.002	0.014	0.043	0.0001	0.002	0.0015	0.00082	0.0015	0.002	0.002	0.002
Silver (Ag)	mg/L	0.000005	0.0001	0.000051	0.000034	0.000039	0.00005	0.000063	0.000093	0.00001	0.00005	0.00004	0.000017	0.00004	0.00005	0.00005	0.00005	0.00002	0.00005	0.000043	0.000013	0.000043	0.00005	0.00005	0.00005
Strontium (Sr)	mg/L	0.059	0.082	0.072	0.0084	0.069	0.074	0.078	0.081	0.033	0.047	0.04	0.005	0.038	0.04	0.042	0.046	0.023	0.037	0.03	0.0052	0.026	0.029	0.033	0.036
Thallium (Tl)	mg/L	0.000005	0.00015	0.00011	0.000063	0.00011	0.00015	0.00015	0.00015	0.000005	0.00015	0.00011	0.000063	0.00011	0.00015	0.00015	0.00015	0.00002	0.00015	0.00012	0.000056	0.00012	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.005	0.032	0.014	0.011	0.005	0.009	0.018	0.029	0.005	0.02	0.0088	0.0065	0.005	0.005	0.0088	0.018	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	0.001	0.003	0.002	0.00071	0.0018	0.002	0.0023	0.0029	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.005	0.054	0.029	0.021	0.01	0.029	0.047	0.053	0.0025	0.005	0.0031	0.0011	0.0025	0.0025	0.0031	0.0046	0.0025	0.078	0.023	0.032	0.0025	0.0048	0.025	0.067
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	0.001	0.009	0.003																					

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	BH12-3A (n=3)								BH12-3B (n=3)								BH12-4 (n=3)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.70	8.00	7.80	0.12	7.80	7.80	7.90	7.90	7.20	7.50	7.30	0.14	7.20	7.20	7.40	7.50	7.60	7.80	7.70	0.06	7.60	7.70	7.70	7.80
Alkalinity	mg/L as CaCO ₃	95	120	110	8.3	100	110	110	110	40	61	49	8.8	43	46	54	60	53	80	64	12	56	59	70	78
Electrical Conductivity (EC)	µS/cm	220	250	240	10	240	250	250	250	100	140	120	15	110	120	130	140	120	160	140	17	130	140	150	160
Total Dissolved Solids (TDS)	mg/L	140	150	150	3.3	150	150	150	150	66	170	110	46	77	88	130	160	84	120	97	14	87	90	100	110
Total Suspended Solids (TSS)	mg/L as CaCO ₃	210	1200	650	430	360	520	880	1200	2400	28000	12000	12000	3400	4300	16000	25000	280	7100	3000	2900	1000	1800	4400	6500
Total Hardness	mg/L as CaCO ₃	120	120	120	1.7	120	120	120	120	52	65	56	6.4	52	52	59	64	62	71	66	4	63	65	68	71
MAJOR IONS																									
Calcium (Ca)	mg/L	42	43	42	0.59	42	42	42	43	19	24	21	2.5	19	19	22	24	21	22	22	0.73	21	22	22	22
Magnesium (Mg)	mg/L	3.7	3.8	3.7	0.058	3.7	3.8	3.8	3.8	0.91	1.2	1.1	0.12	1	1.1	1.1	1.2	2.4	3.8	2.9	0.64	2.4	2.5	3.1	3.7
Potassium (K)	mg/L	0.69	1.6	1.2	0.36	0.98	1.3	1.4	1.5	0.26	0.68	0.44	0.18	0.32	0.38	0.53	0.65	0.55	1.4	1	0.35	0.81	1.1	1.2	1.4
Sodium (Na)	mg/L	2.3	5.2	3.6	1.2	2.8	3.2	4.2	5	1.7	2.2	2	0.18	1.9	2	2.1	2.1	1.8	11	5.2	3.8	2.6	3.4	6.9	9.8
Chloride (Cl)	mg/L	1.2	1.7	1.5	0.2	1.4	1.6	1.6	1.7	0.95	1.8	1.3	0.36	1.1	1.2	1.5	1.7	0.64	1.9	1.3	0.53	0.97	1.3	1.6	1.9
Fluoride (F)	mg/L	0.025	0.12	0.078	0.04	0.058	0.09	0.11	0.12	0.025	0.06	0.037	0.016	0.025	0.025	0.043	0.057	0.025	0.11	0.053	0.04	0.025	0.025	0.068	0.1
Sulphate (SO ₄)	mg/L	14	23	19	3.8	17	20	22	23	7	11	8.6	1.5	7.6	8.1	9.4	10	7.4	8.8	8.2	0.57	7.9	8.4	8.6	8.7
METALS																									
Aluminum (Al)	mg/L	0.01	0.015	0.013	0.0021	0.012	0.013	0.014	0.015	0.029	0.1	0.053	0.033	0.03	0.03	0.065	0.093	0.017	0.074	0.04	0.024	0.024	0.03	0.052	0.07
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Barium (Ba)	mg/L	0.016	0.018	0.017	0.00082	0.017	0.017	0.018	0.018	0.002	0.004	0.003	0.00082	0.0025	0.003	0.0035	0.0039	0.011	0.013	0.012	0.00082	0.012	0.012	0.013	0.013
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.005	0.011	0.007	0.0028	0.005	0.005	0.008	0.01	0.005	0.011	0.007	0.0028	0.005	0.005	0.008	0.01
Cadmium (Cd)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	0.00025	0.0009	0.00047	0.00031	0.00025	0.00025	0.00058	0.00084
Copper (Cu)	mg/L	0.001	0.004	0.0023	0.0012	0.0015	0.002	0.003	0.0038	0.004	0.005	0.0043	0.00047	0.004	0.004	0.0045	0.0049	0.001	0.016	0.0067	0.0066	0.002	0.003	0.0095	0.015
Iron (Fe)	mg/L	0.005	0.12	0.044	0.055	0.005	0.005	0.064	0.11	0.005	0.057	0.03	0.021	0.017	0.028	0.043	0.054	0.005	0.058	0.023	0.025	0.005	0.005	0.032	0.053
Lead (Pb)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Manganese (Mn)	mg/L	0.043	0.13	0.083	0.034	0.062	0.081	0.1	0.12	0.005	0.02	0.013	0.0061	0.009	0.013	0.017	0.019	0.025	0.17	0.077	0.065	0.032	0.038	0.1	0.16
Mercury (Hg)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	0.041	0.089	0.068	0.02	0.057	0.073	0.081	0.087	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.001	0.003	0.0017	0.00094	0.001	0.001	0.002	0.0028
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
Silver (Ag)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00005	0.0001	0.000067	0.000024	0.00005	0.00005	0.000075	0.000095
Strontium (Sr)	mg/L	0.04	0.046	0.042	0.0028	0.04	0.04	0.043	0.045	0.018	0.029	0.025	0.005	0.023	0.028	0.029	0.029	0.029	0.051	0.037	0.0097	0.031	0.032	0.042	0.049
Thallium (Tl)	mg/L	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.002	0.0013	0.00047	0.001	0.001	0.0015	0.0019	0.001	0.002	0.0013	0.00047	0.001	0.001	0.0015	0.0019
Tungsten (W)	mg/L	0.022	0.078	0.052	0.023	0.039	0.055	0.067	0.076	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.023	0.21	0.097	0.083	0.039	0.055	0.13	0.2
Uranium (U)	mg/L	0.006	0.009	0.008	0.0014	0.0075	0.009	0.009	0.009	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.008	0.0033	0.0033	0.001	0.001	0.0045	0.0073
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.006	0.0037	0.0016	0.0025	0.0025	0.0043	0.0057	0.0025	0.15	0.063	0.06	0.022	0.041	0.093	0.13	0.01	0.022	0.017	0.0052	0.015	0.02	0.021	0.022
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.0													

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	BH12-BULK1 (n=3)								DH12-PO-10 (n=4)								DH12-PO-14B (n=3)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.70	8.00	7.90	0.10	7.80	7.90	7.90	8.00	7.90	8.10	8.00	0.11	7.90	7.90	8.00	8.10	7.80	8.00	7.90	0.09	7.90	7.90	8.00	8.00
Alkalinity	mg/L as CaCO ₃	110	120	120	3.9	110	110	120	120	140	150	140	5.4	140	140	150	150	91	110	97	5.5	94	96	99	100
Electrical Conductivity (EC)	µS/cm	270	300	280	14	270	280	290	300	280	340	300	25	290	300	310	340	190	230	210	13	200	200	210	220
Total Dissolved Solids (TDS)	mg/L	150	180	170	12	160	180	180	180	160	230	190	26	180	190	210	230	130	180	160	19	140	150	170	180
Total Suspended Solids (TSS)	mg/L as CaCO ₃	69	130	110	27	95	120	130	130	630	2000	1200	510	850	1100	1500	1900	5600	16000	10000	4400	5900	9100	13000	15000
Total Hardness	mg/L as CaCO ₃	130	150	140	6.9	140	140	150	150	140	140000	36000	62000	140	150	36000	120000	81	110	98	12	90	99	110	110
MAJOR IONS																									
Calcium (Ca)	mg/L	49	55	52	2.6	50	52	53	55	42	46	44	1.6	43	44	45	46	25	33	29	3.3	27	30	32	33
Magnesium (Mg)	mg/L	2.9	3.1	3	0.11	3	3	3.1	3.1	7.7	8.6	8.1	0.31	7.9	8	8.2	8.5	4.7	5400	1400	2300	5.9	6.8	1400	4600
Potassium (K)	mg/L	1.2	1.5	1.3	0.15	1.2	1.3	1.4	1.5	1.3	1.7	1.4	0.16	1.3	1.4	1.5	1.7	0.59	1.3	0.92	0.26	0.79	0.89	1	1.3
Sodium (Na)	mg/L	2.7	3.2	3	0.18	2.9	3	3.1	3.1	3.3	20	9.2	6.3	5.3	6.8	11	18	4.1	8.6	6.2	1.8	4.8	6.1	7.5	8.3
Chloride (Cl)	mg/L	1.4	1.6	1.5	0.083	1.5	1.5	1.6	1.6	0.9	2.7	1.8	0.64	1.5	1.8	2	2.6	2.4	4.2	3.2	0.7	2.6	3	3.7	4.1
Fluoride (F)	mg/L	0.025	0.11	0.075	0.036	0.058	0.09	0.1	0.11	0.1	0.14	0.12	0.015	0.11	0.11	0.12	0.14	0.025	0.14	0.099	0.047	0.074	0.12	0.14	0.14
Sulphate (SO ₄)	mg/L	25	34	30	3.5	27	29	32	34	5.1	33	14	11	5.2	8.2	17	29	8.3	9.8	9	0.69	8.4	9	9.6	9.8
METALS																									
Aluminum (Al)	mg/L	0.008	0.015	0.011	0.0029	0.0095	0.011	0.013	0.015	0.007	0.2	0.061	0.078	0.015	0.02	0.065	0.17	0.015	0.094	0.04	0.032	0.023	0.025	0.042	0.084
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.0015	0.05	0.015	0.02	0.0015	0.0038	0.017	0.043	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Barium (Ba)	mg/L	0.025	0.043	0.035	0.0074	0.031	0.036	0.04	0.042	0.007	0.038	0.026	0.011	0.022	0.029	0.032	0.037	0.013	0.018	0.015	0.0018	0.015	0.015	0.016	0.018
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.005	0.012	0.009	0.0029	0.0075	0.01	0.011	0.012	0.005	0.015	0.011	0.0038	0.01	0.013	0.014	0.015	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00005	0.0001	0.000083	0.000024	0.000075	0.0001	0.0001	0.0001	0.00001	0.00005	0.00004	0.000017	0.00004	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	0.00025	0.0006	0.00037	0.00016	0.00025	0.00025	0.00043	0.00057	0.00025	0.0008	0.0005	0.00025	0.00025	0.00048	0.00073	0.00079	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.001	0.004	0.0027	0.0012	0.002	0.003	0.0035	0.0039	0.003	0.008	0.0054	0.0022	0.0034	0.0053	0.0073	0.0079	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Iron (Fe)	mg/L	0.005	0.11	0.038	0.047	0.005	0.005	0.055	0.095	0.005	0.14	0.046	0.053	0.005	0.022	0.062	0.12	0.032	31	7.8	13	0.063	0.081	7.8	26
Lead (Pb)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	0.00005	0.0005	0.00039	0.00019	0.00039	0.0005	0.0005	0.0005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Manganese (Mn)	mg/L	0.042	0.31	0.15	0.12	0.068	0.094	0.2	0.29	0.039	0.27	0.15	0.086	0.086	0.14	0.21	0.25	0.053	0.064	0.059	0.0044	0.055	0.059	0.063	0.064
Mercury (Hg)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0000013	0.00005	0.000038	0.000021	0.000038	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	0.11	0.15	0.13	0.016	0.12	0.13	0.14	0.15	0.001	0.048	0.024	0.017	0.013	0.024	0.035	0.045	0.005	0.01	0.0078	0.0023	0.0058	0.008	0.01	0.01
Nickel (Ni)	mg/L	0.0015	0.003	0.002	0.00071	0.0015	0.0015	0.0023	0.0029	0.0015	0.009	0.0043	0.0031	0.0015	0.0033	0.006	0.0084	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	0.0002	0.002	0.0016	0.00078	0.0016	0.002	0.002	0.002	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
Silver (Ag)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00002	0.00005	0.000043	0.000013	0.000043	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (Sr)	mg/L	0.054	0.063	0.058	0.0039	0.055	0.056	0.06	0.062	0.042	0.11	0.08	0.024	0.072	0.085	0.093	0.11	0.065	0.079	0.07	0.0057	0.065	0.067	0.072	0.078
Thallium (Tl)	mg/L	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003	0.000005	0.00015	0.00011	0.000063	0.00011	0.00015	0.00015	0.00015	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.005	0.014	0.008	0.0042	0.005	0.005	0.0095	0.013	0.021	0.091	0.058	0.025	0.046	0.059	0.071	0.087	0.028	0.094	0.064	0.029	0.039	0.068	0.093	0.094
Uranium (U)	mg/L	0.007	0.014	0.011	0.0031	0.01	0.013	0.014	0.014	0.001	0.002	0.0013	0.00043	0.001	0.001	0.0013	0.0019	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.002	0.0013	0.00043	0.001	0.001	0.0013	0.0019	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.009	0.0065	0.0029	0.0053	0.008	0.0085	0.0089	0.01	0.39	0.21	0.18	0.048	0.22	0.39	0.39	0.0025	28	7	12	0.018	0.088	7.1	24
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.002	0.001	0.001	0.002	0.003	0.003	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Total Ammonia (NH ₃ + NH ₄)																									

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-TMF-05A (n=7)								DH12-TMF-05B (n=7)								DH12-TMF-12 (n=7)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.50	8.00	7.80	0.19	7.70	7.90	8.00	8.00	7.00	8.20	7.70	0.36	7.60	7.90	7.90	8.10	7.40	8.00	7.80	0.20	7.60	7.80	8.00	8.00
Alkalinity	mg/L as CaCO ₃	130	150	140	8.2	140	140	150	150	230	550	350	120	260	330	420	530	87	100	92	5.4	88	89	94	100
Electrical Conductivity (EC)	µS/cm	390	590	450	61	420	430	440	550	460	1100	710	220	510	710	860	1000	740	890	810	54	760	820	850	880
Total Dissolved Solids (TDS)	mg/L	210	400	300	81	230	270	390	400	360	710	540	120	460	560	600	690	470	750	580	77	560	570	580	700
Total Suspended Solids (TSS)	mg/L as CaCO ₃	210	2600	680	810	270	340	510	2000	340	26000	9400	8100	3800	5700	13000	22000	61	2400	890	800	310	570	1300	2200
Total Hardness	mg/L as CaCO ₃	130	150000	22000	53000	140	140	150	110000	150	230	190	23	190	200	200	220	320	370	350	15	340	350	360	370
MAJOR IONS																									
Calcium (Ca)	mg/L	38	46	41	2.4	39	40	42	45	41	62	53	5.9	51	53	55	60	82	92	88	3.5	85	88	91	92
Magnesium (Mg)	mg/L	7.6	11	9.8	1.2	9.4	9.9	11	11	12	19	15	2	14	16	16	18	28	34	32	1.7	31	31	32	34
Potassium (K)	mg/L	2.4	4.8	3.2	0.79	2.6	3	3.6	4.5	2.6	3.7	3.1	0.34	2.8	3.1	3.3	3.6	2.1	2.5	2.2	0.12	2.2	2.2	2.3	2.4
Sodium (Na)	mg/L	23	77	37	18	26	30	38	66	36	170	92	47	47	96	120	160	28	39	34	3.4	33	35	36	38
Chloride (Cl)	mg/L	5.3	15	7.9	3.2	6	6.7	7.9	13	5.1	14	9.9	3.2	7	11	13	13	16	18	17	0.5	17	18	18	18
Fluoride (F)	mg/L	0.28	0.88	0.68	0.18	0.68	0.74	0.75	0.84	0.025	0.16	0.084	0.053	0.025	0.1	0.13	0.15	0.025	0.27	0.1	0.082	0.025	0.13	0.13	0.23
Sulphate (SO ₄)	mg/L	43	150	71	35	49	64	71	130	1.6	79	22	26	2.6	12	30	65	280	320	300	11	300	300	310	310
METALS																									
Aluminum (Al)	mg/L	0.007	0.15	0.049	0.054	0.009	0.014	0.079	0.14	0.043	0.14	0.11	0.035	0.08	0.12	0.14	0.14	0.002	0.012	0.0057	0.0037	0.002	0.005	0.0085	0.011
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.035	0.0015	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035
Barium (Ba)	mg/L	0.028	0.059	0.037	0.01	0.03	0.031	0.039	0.054	0.035	0.065	0.049	0.012	0.038	0.045	0.061	0.064	0.018	0.03	0.023	0.0037	0.021	0.022	0.025	0.029
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.031	0.036	0.033	0.0016	0.033	0.033	0.035	0.036	0.005	0.023	0.013	0.0064	0.0085	0.012	0.018	0.022	0.005	0.053	0.041	0.015	0.043	0.047	0.05	0.052
Cadmium (Cd)	mg/L	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.003	0.009	0.006	0.002	0.0045	0.006	0.0075	0.0087	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	0.00025	0.0006	0.0003	0.00012	0.00025	0.00025	0.00025	0.0005	0.0011	0.0039	0.0021	0.00096	0.0014	0.0016	0.0028	0.0036	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0006	0.002	0.0012	0.00051	0.001	0.001	0.0015	0.002	0.001	0.0055	0.0016	0.0016	0.001	0.001	0.001	0.0042	0.0007	0.001	0.00096	0.0001	0.001	0.001	0.001	0.001
Iron (Fe)	mg/L	0.005	0.18	0.033	0.062	0.005	0.005	0.014	0.14	0.013	17	9.5	6.2	4.2	12	14	16	0.005	0.22	0.078	0.077	0.021	0.048	0.11	0.21
Lead (Pb)	mg/L	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.00047	0.00007	0.0005	0.0005	0.0005	0.0005	0.0001	0.0005	0.00044	0.00014	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.042	0.32	0.15	0.083	0.098	0.15	0.18	0.28	0.43	0.74	0.64	0.11	0.58	0.7	0.73	0.74	0.83	1	0.9	0.069	0.85	0.87	0.94	1
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	0.007	0.18	0.039	0.059	0.0075	0.01	0.033	0.14	0.001	0.005	0.002	0.0014	0.001	0.001	0.0025	0.0044	0.003	0.005	0.0036	0.00073	0.003	0.003	0.004	0.0047
Nickel (Ni)	mg/L	0.0015	0.006	0.0035	0.0018	0.0015	0.004	0.005	0.0057	0.0015	0.005	0.0025	0.0016	0.0015	0.0015	0.0033	0.005	0.0015	0.003	0.0017	0.00052	0.0015	0.0015	0.0015	0.0026
Selenium (Se)	mg/L	0.0002	0.002	0.0017	0.00063	0.002	0.002	0.002	0.002	0.002	0.05	0.0089	0.017	0.002	0.002	0.036	0.0006	0.0006	0.002	0.0018	0.00049	0.002	0.002	0.002	0.002
Silver (Ag)	mg/L	0.00003	0.00005	0.000047	0.000007	0.00005	0.00005	0.00005	0.00005	0.000005	0.00005	0.000044	0.000016	0.00005	0.00005	0.00005	0.00005	0.00002	0.00005	0.000046	0.00001	0.00005	0.00005	0.00005	0.00005
Strontium (Sr)	mg/L	0.29	0.33	0.31	0.014	0.3	0.31	0.32	0.33	0.14	0.22	0.18	0.024	0.17	0.18	0.19	0.21	0.52	0.79	0.61	0.08	0.57	0.59	0.61	0.74
Thallium (Tl)	mg/L	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	0.001	0.005	0.0017	0.0014	0.001	0.001	0.0015	0.0041	0.003	0.02	0.011	0.0052	0.007	0.011	0.013	0.018	0.001	0.006	0.0036	0.0017	0.0025	0.003	0.005	0.0057
Tungsten (W)	mg/L	0.005	0.015	0.0071	0.0036	0.005	0.005	0.0075	0.014	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	0.003	0.007	0.0044	0.0013	0.0035	0.004	0.005	0.0064	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.003	0.004	0.0037	0.00045	0.0035	0.004	0.004	0.004
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.006	0.0043	0.0019	0.003	0.005	0.006	0.006	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.096	0.029	0.034	0.0025	0.005	0.047	0.085	0.0025	1.3	0.18	0.43	0.0043	0.009	0.012	0.88	0.0025	0.016	0.0052	0.0048	0.0025	0.0025	0.0053	0.014
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	0.0010	0.0020	0.0011	0.00035	0.0010	0.0010	0.0010	0.0017	0.001	0.025	0.0044	0.0084	0.001	0.001	0.001	0.018	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Total Ammonia (NH ₃ + NH ₄)	mg/L as N	0.01	0.07	0.024	0.023	0.01	0.01	0.03	0.064	0.2	0.94	0.51	0.28	0.3	0.35	0.74	0.92	0.01	0.22	0.064	0				

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-TMF-16 (n=3)								DH12-TMF-27A (n=7)								DH12-TMF-27B (n=7)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.20	7.90	7.60	0.28	7.40	7.60	7.70	7.90	6.50	7.70	7.30	0.39	7.30	7.40	7.60	7.70	6.30	8.20	7.40	0.54	7.30	7.50	7.70	8.10
Alkalinity	mg/L as CaCO ₃	55	64	59	3.7	57	59	62	64	27	120	53	29	40	42	49	100	28	140	66	48	34	40	91	140
Electrical Conductivity (EC)	µS/cm	130	140	130	1.4	130	130	130	140	67	260	130	58	96	100	140	220	77	310	150	97	89	93	200	310
Total Dissolved Solids (TDS)	mg/L	80	92	86	4.9	83	86	89	91	64	150	81	29	65	72	77	130	56	190	100	53	61	70	140	190
Total Suspended Solids (TSS)	mg/L as CaCO ₃	150	1300	530	510	160	180	710	1100	600	3800	2100	1200	1100	1800	3200	3700	1900	11000	5700	3500	2200	5500	8600	11000
Total Hardness	mg/L as CaCO ₃	62	59000	20000	28000	62	63	29000	53000	27	130	55	32	39	44	52	110	29	150	68	51	34	41	94	150
MAJOR IONS																									
Calcium (Ca)	mg/L	16	17	17	0.62	17	17	17	17	6.3	38	14	9.8	9.4	11	13	31	6.1	44	17	16	6.7	7.9	24	43
Magnesium (Mg)	mg/L	4.5	4.7	4.6	0.076	4.6	4.6	4.7	4.7	2.8	8.8	4.7	1.8	3.7	4.2	5	7.8	3.3	10	6.1	2.7	4.1	5.2	7.9	10
Potassium (K)	mg/L	0.36	0.44	0.41	0.035	0.4	0.43	0.44	0.44	0.32	1.3	0.61	0.32	0.44	0.47	0.65	1.2	0.38	1.3	0.69	0.34	0.43	0.57	0.88	1.2
Sodium (Na)	mg/L	1.8	2.1	2	0.16	1.9	2	2.1	2.1	1.4	5.1	2.5	1.2	1.8	1.9	2.7	4.6	2	3.2	2.4	0.42	2.1	2.3	2.7	3
Chloride (Cl)	mg/L	0.28	0.42	0.34	0.06	0.3	0.31	0.37	0.41	0.26	0.64	0.46	0.13	0.37	0.48	0.55	0.63	0.35	0.82	0.5	0.17	0.39	0.44	0.57	0.78
Fluoride (F)	mg/L	0.025	0.07	0.048	0.018	0.038	0.05	0.06	0.068	0.025	0.18	0.076	0.054	0.025	0.07	0.11	0.16	0.025	0.08	0.038	0.021	0.025	0.025	0.043	0.074
Sulphate (SO ₄)	mg/L	5.8	6.1	5.9	0.14	5.8	5.9	6	6.1	4.4	12	6.1	2.4	4.6	4.8	6.3	10	4.6	14	7.4	4	4.8	5.2	9.2	14
METALS																									
Aluminum (Al)	mg/L	0.014	0.18	0.074	0.078	0.019	0.024	0.1	0.17	0.002	0.052	0.014	0.016	0.0055	0.009	0.012	0.041	0.004	0.039	0.016	0.012	0.0065	0.013	0.023	0.035
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.018	0.023	0.0015	0.0015	0.026	0.045	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035
Barium (Ba)	mg/L	0.002	0.006	0.0037	0.0017	0.0025	0.003	0.0045	0.0057	0.001	0.016	0.0056	0.0045	0.0035	0.004	0.0055	0.013	0.001	0.014	0.005	0.0054	0.0015	0.002	0.0075	0.014
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00001	0.00005	0.000037	0.000019	0.00003	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00001	0.0001	0.000051	0.000024	0.00005	0.00005	0.00005	0.000085
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0016	0.006	0.0032	0.002	0.0018	0.002	0.004	0.0056	0.001	0.003	0.0014	0.00073	0.001	0.001	0.0015	0.0027	0.0007	0.001	0.00096	0.0001	0.001	0.001	0.001	0.001
Iron (Fe)	mg/L	0.005	0.02	0.01	0.0071	0.005	0.005	0.013	0.019	0.005	0.015	0.0064	0.0035	0.005	0.005	0.005	0.012	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Lead (Pb)	mg/L	0.0002	0.0005	0.0004	0.00014	0.00035	0.0005	0.0005	0.0005	0.0001	0.0005	0.00044	0.00014	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.00046	0.0001	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.002	0.017	0.008	0.0065	0.0035	0.005	0.011	0.016	0.004	0.056	0.02	0.018	0.006	0.012	0.029	0.049	0.001	0.018	0.0061	0.0064	0.001	0.002	0.01	0.017
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000034	0.000023	0.000026	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.002	0.05	0.018	0.023	0.002	0.002	0.026	0.045	0.0003	0.002	0.0018	0.00059	0.002	0.002	0.002	0.002	0.0004	0.002	0.0018	0.00056	0.002	0.002	0.002	0.002
Silver (Ag)	mg/L	0.00004	0.0002	0.00011	0.000066	0.00007	0.0001	0.00015	0.00019	0.00005	0.0002	0.00011	0.00007	0.00005	0.00005	0.00019	0.0002	0.000005	0.00005	0.000044	0.000016	0.00005	0.00005	0.00005	0.00005
Strontium (Sr)	mg/L	0.019	0.034	0.025	0.0065	0.021	0.022	0.028	0.033	0.014	0.093	0.031	0.026	0.018	0.023	0.026	0.073	0.016	0.059	0.03	0.017	0.019	0.019	0.038	0.058
Thallium (Tl)	mg/L	0.000005	0.00015	0.0001	0.000068	0.000078	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.0013	0.0007	0.001	0.001	0.001	0.0024	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.017	0.074	0.038	0.025	0.021	0.024	0.049	0.069	0.005	0.042	0.016	0.015	0.005	0.005	0.026	0.041	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.0016	0.0009	0.001	0.001	0.002	0.003
Vanadium (V)	mg/L	0.001	0.002	0.0017	0.00047	0.0015	0.002	0.002	0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.35	0.14	0.15	0.027	0.052	0.2	0.32	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	0.0025	0.022	0.0061	0.0068	0.0025	0.0025	0.0053	0.018
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	<0.002	<0.002	&																					

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-TMF-28 (n=7)								DH12-TMF-31A (n=7)								DH12-TMF-31B (n=7)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.50	8.10	7.80	0.21	7.60	7.80	7.90	8.00	7.30	8.20	7.90	0.26	7.80	7.90	8.00	8.10	6.80	7.80	7.30	0.38	7.00	7.60	7.60	7.80
Alkalinity	mg/L as CaCO ₃	94	140	110	17	99	110	130	140	110	130	120	6.5	110	120	120	130	39	83	54	16	43	46	63	80
Electrical Conductivity (EC)	µS/cm	330	480	370	47	350	360	380	460	230	250	240	5.6	240	240	250	250	100	180	130	29	110	120	140	180
Total Dissolved Solids (TDS)	mg/L	200	310	240	37	220	220	260	300	130	280	160	50	140	140	150	240	72	210	110	47	81	88	130	190
Total Suspended Solids (TSS)	mg/L as CaCO ₃	57	550	220	150	130	140	250	470	330	1100	630	250	460	580	720	1000	970	23000	6500	7700	1500	2800	8100	20000
Total Hardness	mg/L as CaCO ₃	87	170	130	25	120	140	150	160	120	130	120	4	120	120	130	130	41	95	58	18	46	52	64	89
MAJOR IONS																									
Calcium (Ca)	mg/L	22	45	36	6.9	34	39	40	44	42	46	44	1.5	43	44	45	46	15	35	22	6.9	17	19	24	33
Magnesium (Mg)	mg/L	7.5	14	11	1.8	9.5	11	12	13	2.7	3.7	3.2	0.31	2.9	3.2	3.3	3.6	0.8	1.8	1	0.34	0.85	0.92	0.95	1.6
Potassium (K)	mg/L	0.83	1.7	1.1	0.26	0.94	1.1	1.2	1.5	0.3	0.64	0.46	0.1	0.4	0.46	0.5	0.61	0.08	1.6	0.4	0.49	0.12	0.19	0.35	1.2
Sodium (Na)	mg/L	16	31	24	5	21	23	28	30	1.3	1.6	1.4	0.086	1.4	1.4	1.5	1.5	1.2	1.6	1.3	0.14	1.2	1.3	1.4	1.5
Chloride (Cl)	mg/L	1.9	7.1	4.3	1.7	3	4.2	5.4	6.6	0.5	0.67	0.55	0.054	0.52	0.52	0.56	0.64	0.25	1.2	0.54	0.27	0.42	0.5	0.53	0.98
Fluoride (F)	mg/L	0.58	1.1	0.89	0.17	0.81	0.88	1	1.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05
Sulphate (SO ₄)	mg/L	27	100	66	23	53	70	80	97	8	8.9	8.4	0.3	8.2	8.4	8.7	8.8	6.6	9	7.5	0.83	6.6	7.5	7.9	8.7
METALS																									
Aluminum (Al)	mg/L	0.002	0.045	0.013	0.014	0.002	0.009	0.015	0.037	0.006	0.33	0.063	0.11	0.011	0.013	0.033	0.24	0.017	0.068	0.034	0.017	0.018	0.034	0.041	0.061
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035
Barium (Ba)	mg/L	0.023	0.057	0.034	0.01	0.028	0.03	0.035	0.051	0.004	0.008	0.0053	0.0015	0.004	0.005	0.006	0.0077	0.001	0.005	0.0024	0.0013	0.0015	0.002	0.003	0.0044
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.012	0.019	0.016	0.0023	0.014	0.016	0.017	0.019	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00002	0.00005	0.000046	0.00001	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	0.00025	0.0006	0.0003	0.00012	0.00025	0.00025	0.00025	0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0007	0.001	0.00096	0.0001	0.001	0.001	0.001	0.001	0.0008	0.005	0.0015	0.0014	0.001	0.001	0.001	0.0038	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Iron (Fe)	mg/L	0.037	0.3	0.18	0.084	0.13	0.19	0.23	0.28	0.005	0.56	0.084	0.19	0.005	0.005	0.005	0.39	0.005	0.14	0.04	0.043	0.005	0.036	0.046	0.11
Lead (Pb)	mg/L	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005	0.0001	0.0005	0.00044	0.00014	0.0005	0.0005	0.0005	0.0005	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.16	0.46	0.34	0.093	0.3	0.32	0.4	0.45	0.001	0.13	0.021	0.043	0.001	0.004	0.007	0.091	0.002	0.066	0.019	0.023	0.003	0.005	0.027	0.058
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	0.001	0.009	0.0031	0.0029	0.001	0.001	0.0045	0.0081	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.0004	0.002	0.0018	0.00056	0.002	0.002	0.002	0.002	0.0001	0.002	0.0017	0.00066	0.002	0.002	0.002	0.002	0.0002	0.002	0.0017	0.00063	0.002	0.002	0.002	0.002
Silver (Ag)	mg/L	0.000005	0.00005	0.000044	0.000016	0.00005	0.00005	0.00005	0.00005	0.00005	0.0003	0.00011	0.000092	0.00005	0.00005	0.00015	0.00027	0.00002	0.00005	0.000046	0.00001	0.00005	0.00005	0.00005	0.00005
Strontium (Sr)	mg/L	0.064	0.11	0.081	0.015	0.071	0.081	0.085	0.1	0.029	0.038	0.032	0.0029	0.03	0.031	0.033	0.037	0.02	0.047	0.029	0.0088	0.023	0.025	0.032	0.044
Thallium (Tl)	mg/L	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	0.001	0.003	0.0013	0.0007	0.001	0.001	0.001	0.0024	0.001	0.004	0.0014	0.001	0.001	0.001	0.001	0.0031	0.001	0.003	0.0013	0.0007	0.001	0.001	0.001	0.0024
Tungsten (W)	mg/L	0.005	0.027	0.01	0.0086	0.005	0.005	0.013	0.025	0.005	0.022	0.0084	0.006	0.005	0.005	0.0085	0.019	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	0.003	0.005	0.0039	0.00083	0.003	0.004	0.0045	0.005	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.0013	0.0007	0.001	0.001	0.001	0.0024	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.069	0.012	0.023	0.0025	0.0025	0.0038	0.05	0.0025	0.053	0.014	0.017	0.0025	0.008	0.015	0.043	0.0025	0.005	0.0029	0.00087	0.0025	0.0025	0.0025	0.0043
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.007	0.0019	0.0021	0.001	0.0.										

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-TMF-32A (n=6)								DH12-TMF-32B (n=7)								DH12-TMF-23A (n=3)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.30	8.10	7.80	0.26	7.70	7.90	8.00	8.00	6.50	7.60	7.20	0.40	6.90	7.50	7.50	7.50	7.80	8.00	7.90	0.09	7.80	7.90	7.90	8.00
Alkalinity	mg/L as CaCO ₃	120	140	130	5.3	130	130	140	140	43	65	53	7.1	49	54	57	63	73	100	83	13	74	74	88	99
Electrical Conductivity (EC)	µS/cm	300	320	310	8.4	300	300	310	320	110	150	130	13	120	130	130	140	180	260	220	35	190	210	240	260
Total Dissolved Solids (TDS)	mg/L	170	210	190	17	180	190	200	210	74	94	84	7.9	76	86	91	93	110	180	140	29	120	120	150	170
Total Suspended Solids (TSS)	mg/L as CaCO ₃	50	1100	420	450	96	140	750	1100	670	4500	1700	1300	750	930	2100	4000	170	420	290	100	230	290	350	400
Total Hardness	mg/L as CaCO ₃	130	140	140	4	140	140	140	140	51	47000	6800	17000	55	61	69	33000	76	76000	25000	36000	77	77	38000	69000
MAJOR IONS																									
Calcium (Ca)	mg/L	42	46	45	1.5	45	45	45	46	18	26	22	2.9	20	21	24	26	22	23	22	0.24	22	22	22	23
Magnesium (Mg)	mg/L	5.8	6.4	6.2	0.24	6	6.2	6.4	6.4	0.85	1.3	1	0.16	0.9	0.99	1.2	1.3	4.9	5.2	5	0.12	5	5	5.1	5.2
Potassium (K)	mg/L	1.1	1.8	1.4	0.24	1.2	1.4	1.5	1.7	0.24	0.46	0.37	0.067	0.35	0.38	0.41	0.45	1.1	1.3	1.2	0.093	1.2	1.3	1.3	1.3
Sodium (Na)	mg/L	8.1	14	10	2	8.5	9.2	11	13	0.99	1.6	1.3	0.16	1.2	1.3	1.3	1.5	5.4	11	8.1	2.4	6.5	7.7	9.4	11
Chloride (Cl)	mg/L	0.68	1.3	0.91	0.23	0.74	0.8	1.1	1.3	0.36	0.54	0.46	0.067	0.42	0.43	0.53	0.54	2.7	3.6	3.3	0.38	3.1	3.4	3.5	3.6
Fluoride (F)	mg/L	0.35	0.48	0.4	0.041	0.38	0.39	0.41	0.47	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	0.14	0.16	0.15	0.0094	0.15	0.16	0.16	0.16
Sulphate (SO ₄)	mg/L	22	27	23	1.9	22	22	24	26	5.4	7.5	6.3	0.63	6	6.1	6.7	7.2	7.5	15	11	3.2	9.6	12	14	15
METALS																									
Aluminum (Al)	mg/L	0.006	0.037	0.019	0.014	0.006	0.014	0.032	0.037	0.002	0.18	0.034	0.06	0.004	0.006	0.02	0.14	0.011	0.029	0.02	0.0074	0.016	0.021	0.025	0.028
Antimony (Sb)	mg/L	0.003	0.006	0.0035	0.0011	0.003	0.003	0.003	0.0053	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.016	0.23	0.18	0.073	0.19	0.21	0.21	0.23	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	0.0015	0.05	0.018	0.023	0.0015	0.0015	0.026	0.045
Barium (Ba)	mg/L	0.02	0.034	0.028	0.0047	0.024	0.029	0.031	0.033	0.001	0.005	0.0029	0.0011	0.0025	0.003	0.003	0.0044	0.008	0.027	0.018	0.0078	0.014	0.019	0.023	0.026
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.1	0.15	0.12	0.017	0.11	0.11	0.14	0.15	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.012	0.018	0.015	0.0025	0.013	0.014	0.016	0.018
Cadmium (Cd)	mg/L	0.00001	0.0001	0.000052	0.000026	0.00005	0.00005	0.00005	0.000088	0.00001	0.0002	0.000066	0.000057	0.00005	0.00005	0.00005	0.00016	0.00001	0.00005	0.000037	0.000019	0.00003	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	0.00025	0.0005	0.00029	0.000093	0.00025	0.00025	0.00025	0.00044	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.001	0.0012	0.001	0.000075	0.001	0.001	0.001	0.0012	0.001	0.015	0.0033	0.0048	0.001	0.001	0.0021	0.011	0.0002	0.001	0.00073	0.00038	0.0006	0.001	0.001	0.001
Iron (Fe)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.005	0.018	0.0076	0.0046	0.005	0.005	0.0075	0.016	0.005	0.14	0.05	0.064	0.005	0.005	0.073	0.13
Lead (Pb)	mg/L	0.00005	0.0005	0.00043	0.00017	0.0005	0.0005	0.0005	0.0005	0.0001	0.0005	0.00044	0.00014	0.0005	0.0005	0.0005	0.0005	0.00005	0.0005	0.00035	0.00021	0.00028	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.001	0.13	0.025	0.047	0.001	0.002	0.012	0.1	0.001	0.12	0.037	0.042	0.003	0.008	0.063	0.1	0.092	0.16	0.12	0.026	0.11	0.12	0.14	0.15
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000042	0.000018	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000034	0.000023	0.000026	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	0.012	0.018	0.015	0.0018	0.015	0.016	0.016	0.018	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.002	0.0013	0.00047	0.001	0.001	0.0015	0.0019
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.0002	0.002	0.0017	0.00067	0.002	0.002	0.002	0.002	0.002	0.05	0.0089	0.017	0.002	0.002	0.002	0.036	0.002	0.05	0.018	0.023	0.002	0.002	0.026	0.045
Silver (Ag)	mg/L	0.000005	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.00002	0.00005	0.000046	0.00001	0.00005	0.00005	0.00005	0.00005	0.000005	0.00005	0.000035	0.000021	0.000028	0.00005	0.00005	0.00005
Strontium (Sr)	mg/L	0.11	0.13	0.12	0.009	0.12	0.12	0.12	0.13	0.022	0.036	0.029	0.0046	0.025	0.029	0.032	0.035	0.11	0.16	0.14	0.022	0.12	0.13	0.15	0.16
Thallium (Tl)	mg/L	0.000005	0.00015	0.00013	0.000054	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.0001	0.000068	0.000078	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.005	0.031	0.0093	0.0097	0.005	0.005	0.005	0.025	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.005	0.015	0.01	0.0041	0.0075	0.01	0.013	0.015
Uranium (U)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.009	0.021	0.016	0.0052	0.014	0.019	0.02	0.021
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.028	0.0093	0.0089	0.0031	0.0055	0.011	0.024	0.0025	0.32	0.054	0.11	0.0025	0.0025	0.027	0.24	0.0025	0.036	0.014	0.016	0.0025	0.0025	0.019	0.033
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	0.001	0.003	0.0013	0.00075	0.001	0.001	0.001	0.0025	0.001	0.012	0.0026	0.0038	0.001	0.001	0.001									

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-TMF-23B (n=4)								DH12-TMF-24A (n=3)								DH12-TMF-24B (n=3)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.50	8.00	7.70	0.19	7.60	7.70	7.80	8.00	7.30	7.90	7.60	0.23	7.50	7.70	7.80	7.90	6.70	7.00	6.80	0.11	6.70	6.80	6.90	6.90
Alkalinity	mg/L as CaCO ₃	48	58	53	3.6	51	53	54	57	130	210	180	36	160	200	200	210	17	21	20	1.9	19	21	21	21
Electrical Conductivity (EC)	µS/cm	110	120	120	3	120	120	120	120	520	720	650	89	610	700	710	720	51	58	54	2.9	53	54	56	58
Total Dissolved Solids (TDS)	mg/L	68	110	92	17	83	93	100	110	370	560	460	77	410	450	510	550	76	160	130	40	120	160	160	160
Total Suspended Solids (TSS)	mg/L as CaCO ₃	1100	6800	2700	2400	1400	1500	2900	6000	950	1800	1400	340	1200	1500	1600	1700	4500	26000	12000	9800	5500	6400	16000	24000
Total Hardness	mg/L as CaCO ₃	50	55000	14000	24000	52	56	14000	46000	180	270	210	42	180	180	220	260	16	20	19	2	18	20	20	20
MAJOR IONS																									
Calcium (Ca)	mg/L	16	19	17	1	17	17	18	19	61	92	72	14	61	62	77	89	4.3	5.5	5.1	0.56	4.9	5.5	5.5	5.5
Magnesium (Mg)	mg/L	2.4	3	2.7	0.22	2.4	2.6	2.8	2.9	5.2	9.1	6.9	1.6	5.8	6.4	7.8	8.8	1.3	1.6	1.5	0.13	1.4	1.6	1.6	1.6
Potassium (K)	mg/L	0.17	0.66	0.35	0.18	0.25	0.29	0.39	0.61	2.9	3.4	3.1	0.26	2.9	2.9	3.2	3.4	0.58	0.74	0.64	0.071	0.59	0.6	0.67	0.73
Sodium (Na)	mg/L	1.3	4.8	2.8	1.3	2	2.5	3.2	4.5	36	86	53	23	37	38	62	81	1.9	1.9	1.9	0.026	1.9	1.9	1.9	1.9
Chloride (Cl)	mg/L	0.24	0.47	0.39	0.092	0.35	0.43	0.46	0.47	57	75	64	8.2	58	60	67	74	0.46	0.9	0.73	0.19	0.65	0.83	0.87	0.89
Fluoride (F)	mg/L	0.025	0.12	0.049	0.041	0.025	0.025	0.049	0.11	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05
Sulphate (SO ₄)	mg/L	3.6	5.2	4.2	0.63	3.7	4	4.5	5.1	18	56	33	16	22	27	41	53	2.5	3.1	2.8	0.25	2.6	2.7	2.9	3.1
METALS																									
Aluminum (Al)	mg/L	0.007	0.068	0.028	0.024	0.011	0.019	0.036	0.062	0.04	0.11	0.064	0.03	0.044	0.047	0.077	0.1	0.13	0.16	0.15	0.011	0.14	0.15	0.16	0.16
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.014	0.021	0.0015	0.0015	0.014	0.043	0.0015	0.004	0.0023	0.0012	0.0015	0.0015	0.0028	0.0038	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Barium (Ba)	mg/L	0.003	0.005	0.004	0.00071	0.0038	0.004	0.0043	0.0049	0.063	0.14	0.093	0.032	0.071	0.078	0.11	0.13	0.008	0.009	0.0087	0.00047	0.0085	0.009	0.009	0.009
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.069	0.22	0.12	0.069	0.074	0.078	0.15	0.2	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00001	0.00005	0.00004	0.000017	0.00004	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	0.00025	0.0026	0.0012	0.001	0.00053	0.0008	0.0017	0.0024	0.0005	0.0007	0.0006	0.000082	0.00055	0.0006	0.00065	0.00069
Copper (Cu)	mg/L	0.0005	0.001	0.00088	0.00022	0.00088	0.001	0.001	0.001	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Iron (Fe)	mg/L	0.005	0.013	0.007	0.0035	0.005	0.005	0.007	0.012	0.55	2	1.1	0.61	0.68	0.82	1.4	1.8	5.6	7.8	7	1	6.7	7.7	7.8	7.8
Lead (Pb)	mg/L	0.00005	0.0005	0.00039	0.00019	0.00039	0.0005	0.0005	0.0005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Manganese (Mn)	mg/L	0.001	0.025	0.012	0.0093	0.004	0.01	0.018	0.024	0.3	0.49	0.39	0.078	0.34	0.39	0.44	0.48	0.13	0.15	0.13	0.0087	0.13	0.13	0.14	0.14
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000038	0.000021	0.000038	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.0023	0.00094	0.002	0.003	0.003	0.003	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.0015	0.011	0.0058	0.0039	0.0033	0.005	0.008	0.01	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.002	0.05	0.014	0.021	0.002	0.002	0.014	0.043	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
Silver (Ag)	mg/L	0.000005	0.00005	0.000039	0.000019	0.000039	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00005	0.0001	0.000067	0.000024	0.00005	0.00005	0.000075	0.000095
Strontium (Sr)	mg/L	0.021	0.026	0.023	0.0019	0.022	0.023	0.025	0.026	0.87	1	0.92	0.058	0.88	0.89	0.94	0.99	0.035	0.038	0.036	0.0012	0.036	0.036	0.037	0.038
Thallium (Tl)	mg/L	0.00002	0.00015	0.00012	0.000056	0.00012	0.00015	0.00015	0.00015	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.004	0.009	0.0057	0.0024	0.004	0.004	0.0065	0.0085
Tungsten (W)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.005	0.013	0.0077	0.0038	0.005	0.005	0.009	0.012	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.005	0.0023	0.0019	0.001	0.001	0.003	0.0046	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.002	0.0013	0.00047	0.001	0.001	0.0015	0.0019	0.006	0.018	0.013	0.0052	0.011	0.016	0.017	0.018
Zinc (Zn)	mg/L	0.0025	0.11	0.038	0.043	0.0025	0.02	0.056	0.098	0.0025	0.45	0.15	0.21	0.0025	0.0025	0.22	0.4	0.005	0.081	0.033	0.034	0.0095	0.014	0.048	0.074
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	0.001	0.009	0.003	0.0035	0.001	0.001	0.003	0.0078	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.002	0.00					

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-WD-01 (n=6)								DH12-WD-12A (n=6)								DH12-WD-12B (n=6)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	6.50	7.40	7.00	0.35	6.80	7.00	7.30	7.40	7.40	8.10	7.90	0.21	7.80	7.90	8.00	8.00	7.60	8.20	7.90	0.19	7.80	8.00	8.10	8.10
Alkalinity	mg/L as CaCO ₃	30	74	53	18	35	57	68	73	120	160	140	13	130	130	140	150	120	150	130	10	120	130	130	150
Electrical Conductivity (EC)	µS/cm	87	160	130	28	99	130	140	160	270	510	350	84	280	340	390	480	240	300	270	18	250	270	280	290
Total Dissolved Solids (TDS)	mg/L	52	110	93	20	91	100	110	110	150	720	310	200	170	210	340	640	150	180	160	13	150	160	170	180
Total Suspended Solids (TSS)	mg/L as CaCO ₃	38	1400	480	430	200	370	560	1200	82	13000	2400	4800	120	220	580	9900	13	100	36	30	17	23	37	85
Total Hardness	mg/L as CaCO ₃	33	71	51	16	37	50	64	69	120	150	140	7.6	130	130	140	150	100	140	130	11	130	130	130	140
MAJOR IONS																									
Calcium (Ca)	mg/L	11	23	17	5	12	17	22	23	39	47	43	2.5	42	43	44	46	32	43	40	3.4	40	40	42	43
Magnesium (Mg)	mg/L	1.2	3.2	2.1	0.79	1.4	1.9	2.8	3.1	6.3	7.4	6.7	0.36	6.5	6.6	6.9	7.3	5.6	7.5	6.8	0.62	6.8	6.9	7.1	7.4
Potassium (K)	mg/L	0.45	0.99	0.71	0.2	0.53	0.72	0.85	0.96	1.1	1.6	1.3	0.17	1.2	1.3	1.4	1.5	1.5	1.7	1.6	0.054	1.6	1.6	1.6	1.7
Sodium (Na)	mg/L	1.7	4.9	3	1.2	2	2.9	3.7	4.6	3.1	55	20	19	4.5	17	27	48	3.1	4.6	3.8	0.63	3.3	3.5	4.4	4.6
Chloride (Cl)	mg/L	0.38	1.4	0.72	0.33	0.49	0.66	0.79	1.2	0.61	5.4	2.2	1.8	0.66	1.2	3.4	5	0.68	0.9	0.77	0.088	0.69	0.74	0.85	0.89
Fluoride (F)	mg/L	0.025	0.15	0.062	0.053	0.025	0.025	0.096	0.14	0.025	0.07	0.033	0.017	0.025	0.025	0.025	0.059	0.025	0.14	0.061	0.051	0.025	0.025	0.1	0.14
Sulphate (SO ₄)	mg/L	9.3	11	10	0.62	9.4	9.9	10	11	7.1	120	41	41	7.7	25	56	110	6.4	14	9.2	2.3	7.6	9	10	13
METALS																									
Aluminum (Al)	mg/L	0.024	0.12	0.052	0.033	0.033	0.042	0.048	0.1	0.002	0.18	0.036	0.065	0.0053	0.0075	0.012	0.14	0.005	0.021	0.011	0.0057	0.0058	0.009	0.014	0.02
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.0015	0.05	0.0096	0.018	0.0015	0.0015	0.0015	0.038	0.0015	0.05	0.0096	0.018	0.0015	0.0015	0.0015	0.038
Barium (Ba)	mg/L	0.004	0.023	0.0088	0.0065	0.0053	0.0065	0.0078	0.019	0.01	0.017	0.013	0.0025	0.011	0.012	0.014	0.017	0.012	0.014	0.013	0.0009	0.012	0.013	0.014	0.014
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00005	0.0002	0.000075	0.000056	0.00005	0.00005	0.00005	0.00016	0.00001	0.00005	0.000043	0.000015	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000043	0.000015	0.00005	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	0.00025	0.0015	0.00072	0.00042	0.00036	0.00075	0.0008	0.0013	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.003	0.009	0.0058	0.002	0.0045	0.006	0.0068	0.0085	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.0009	0.002	0.0012	0.00038	0.001	0.001	0.001	0.0018
Iron (Fe)	mg/L	0.005	0.84	0.16	0.3	0.014	0.028	0.042	0.64	0.005	0.26	0.079	0.089	0.015	0.036	0.11	0.22	0.026	0.079	0.05	0.017	0.036	0.052	0.057	0.074
Lead (Pb)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	0.00005	0.0005	0.00043	0.00017	0.0005	0.0005	0.0005	0.0005	0.00005	0.0005	0.00043	0.00017	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.021	0.3	0.1	0.099	0.04	0.051	0.13	0.27	0.012	0.021	0.017	0.0028	0.016	0.018	0.019	0.021	0.037	0.061	0.046	0.0097	0.038	0.043	0.055	0.06
Mercury (Hg)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0000013	0.00005	0.000042	0.000018	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000042	0.000018	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	0.001	0.033	0.0063	0.012	0.001	0.001	0.001	0.025	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.0015	0.00076	0.001	0.001	0.0018	0.0028
Nickel (Ni)	mg/L	0.0015	0.005	0.0021	0.0013	0.0015	0.0015	0.0015	0.0041	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	0.002	0.05	0.01	0.018	0.002	0.002	0.002	0.038	0.002	0.05	0.01	0.018	0.002	0.002	0.002	0.038
Silver (Ag)	mg/L	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00001	0.00005	0.000043	0.000015	0.00005	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (Sr)	mg/L	0.023	0.08	0.04	0.02	0.026	0.031	0.044	0.072	0.065	0.1	0.078	0.013	0.067	0.076	0.085	0.098	0.047	0.058	0.053	0.0038	0.051	0.053	0.056	0.058
Thallium (Tl)	mg/L	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003	0.000005	0.00015	0.00013	0.000054	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000054	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.005	0.11	0.027	0.036	0.0063	0.01	0.021	0.087	0.005	0.026	0.011	0.0075	0.005	0.0075	0.012	0.023	0.053	0.43	0.16	0.14	0.072	0.092	0.22	0.38
Uranium (U)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.002	0.003	0.0022	0.00037	0.002	0.002	0.002	0.0028	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Vanadium (V)	mg/L	0.001	0.002	0.0012	0.00037	0.001	0.001	0.001	0.0018	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.86	0.15	0.32	0.0025	0.0025	0.0074	0.65	0.0025	0.039	0.0092	0.013	0.0025	0.0025	0.0051	0.031	0.0025	0.027	0.014	0.0087	0.0085	0.012	0.022	0.026
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	0.001	0.012	0.0028	0.0041	0.001	0.001	0.001	0.0093	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002								

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-WD-14 (n=7)								DH12-WD-17A (n=7)								DH12-WD-19 (n=3)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.20	8.00	7.70	0.26	7.70	7.80	7.90	8.00	7.70	8.10	7.90	0.11	7.90	8.00	8.00	8.10	7.90	8.10	8.00	0.07	8.00	8.00	8.00	8.10
Alkalinity	mg/L as CaCO ₃	92	110	100	7.6	97	100	110	110	110	150	130	14	120	130	130	150	200	210	210	6.3	200	210	210	210
Electrical Conductivity (EC)	µS/cm	220	240	220	9.2	220	220	230	240	300	420	350	39	310	360	360	400	380	430	410	21	390	410	420	430
Total Dissolved Solids (TDS)	mg/L	120	160	130	13	130	130	130	150	150	290	220	41	210	220	230	280	240	540	340	140	240	240	390	510
Total Suspended Solids (TSS)	mg/L as CaCO ₃	110	770	330	200	230	260	360	670	38	590	150	180	47	72	130	460	190	790	420	270	230	270	530	740
Total Hardness	mg/L as CaCO ₃	96	100	99	2.5	98	99	100	100	93	110	100	4.2	100	100	100	110	190	210	200	7.8	200	210	210	210
MAJOR IONS																									
Calcium (Ca)	mg/L	31	34	32	0.86	32	32	32	33	29	33	31	1.1	30	31	32	32	62	66	65	1.8	64	66	66	66
Magnesium (Mg)	mg/L	4.5	4.9	4.7	0.16	4.5	4.6	4.8	4.9	4.9	6.4	5.9	0.49	5.7	6.1	6.2	6.4	8.2	10	9.3	0.77	9	9.7	9.9	10
Potassium (K)	mg/L	1.1	1.6	1.2	0.17	1.1	1.2	1.3	1.5	1	1.4	1.1	0.11	1.1	1.1	1.1	1.3	1.7	1.8	1.7	0.049	1.7	1.7	1.7	1.8
Sodium (Na)	mg/L	6	7.8	6.6	0.6	6.2	6.3	6.9	7.6	25	39	33	5.1	30	35	37	39	3.9	25	11	9.6	4.3	4.7	15	23
Chloride (Cl)	mg/L	0.9	1.1	0.97	0.055	0.94	0.94	1	1.1	11	22	18	3.9	16	19	21	21	0.96	3.3	2	0.94	1.4	1.9	2.6	3.1
Fluoride (F)	mg/L	0.025	0.17	0.1	0.054	0.063	0.12	0.15	0.16	0.025	0.07	0.031	0.016	0.025	0.025	0.025	0.057	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05
Sulphate (SO ₄)	mg/L	9.8	11	10	0.38	10	10	10	11	15	33	23	5.5	20	24	27	31	11	29	18	8.1	12	12	21	27
METALS																									
Aluminum (Al)	mg/L	0.002	0.013	0.0076	0.0039	0.0045	0.009	0.01	0.012	0.004	0.063	0.025	0.022	0.007	0.013	0.039	0.06	0.013	0.018	0.015	0.0022	0.014	0.014	0.016	0.018
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Barium (Ba)	mg/L	0.01	0.022	0.014	0.004	0.011	0.012	0.016	0.021	0.026	0.077	0.043	0.016	0.033	0.037	0.048	0.069	0.023	0.041	0.031	0.0075	0.026	0.029	0.035	0.04
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.016	0.022	0.019	0.0021	0.018	0.019	0.021	0.022	0.011	0.027	0.02	0.0052	0.018	0.022	0.023	0.026	0.005	0.012	0.0073	0.0033	0.005	0.005	0.0085	0.011
Cadmium (Cd)	mg/L	0.00001	0.0001	0.000051	0.000024	0.00005	0.00005	0.00005	0.000085	0.00001	0.0001	0.000051	0.000024	0.00005	0.00005	0.00005	0.000085	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	0.00025	0.0005	0.00029	0.000087	0.00025	0.00025	0.00025	0.00043	0.00025	0.0005	0.00029	0.000087	0.00025	0.00025	0.00025	0.00043	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0006	0.001	0.00094	0.00014	0.001	0.001	0.001	0.001	0.0007	0.004	0.0018	0.0012	0.001	0.001	0.001	0.0025	0.0037	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002
Iron (Fe)	mg/L	0.005	0.057	0.012	0.018	0.005	0.005	0.005	0.041	0.005	0.039	0.013	0.012	0.005	0.005	0.017	0.032	0.005	0.052	0.021	0.022	0.005	0.005	0.029	0.047
Lead (Pb)	mg/L	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Manganese (Mn)	mg/L	0.004	0.059	0.022	0.02	0.0075	0.013	0.032	0.055	0.082	0.11	0.097	0.01	0.09	0.098	0.1	0.11	0.096	0.18	0.13	0.039	0.099	0.1	0.14	0.17
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	0.004	0.008	0.0057	0.0013	0.005	0.005	0.0065	0.0077	0.005	0.013	0.0077	0.0029	0.0055	0.007	0.009	0.012	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.0015	0.013	0.0045	0.0039	0.0015	0.003	0.0055	0.011	0.0015	0.003	0.002	0.00071	0.0015	0.0015	0.0023	0.0029
Selenium (Se)	mg/L	0.002	0.05	0.0089	0.017	0.002	0.002	0.002	0.036	0.002	0.05	0.0089	0.017	0.002	0.002	0.002	0.036	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
Silver (Ag)	mg/L	0.00002	0.00005	0.000046	0.00001	0.00005	0.00005	0.00005	0.00005	0.000005	0.00005	0.000044	0.000016	0.00005	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (Sr)	mg/L	0.057	0.067	0.062	0.0037	0.059	0.061	0.066	0.067	0.051	0.089	0.07	0.012	0.064	0.074	0.076	0.086	0.14	0.15	0.15	0.0039	0.15	0.15	0.15	0.15
Thallium (Tl)	mg/L	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (Ti)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.005	0.034	0.015	0.011	0.005	0.012	0.021	0.032	0.02	0.68	0.21	0.29	0.028	0.031	0.34	0.67	0.005	0.02	0.01	0.0071	0.005	0.005	0.013	0.019
Uranium (U)	mg/L	0.003	0.004	0.0039	0.00035	0.004	0.004	0.004	0.004	0.001	0.004	0.0016	0.001	0.001	0.001	0.0015	0.0034	0.001	0.004	0.002	0.0014	0.001	0.001	0.0025	0.0037
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.032	0.0081	0.01	0.0025	0.0025	0.0073	0.026	0.0025	0.26	0.077	0.092	0.0038	0.017	0.13	0.23	0.0025	0.019	0.0098	0.0069	0.0053	0.008	0.014	0.018
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.005	0.0016	0.0014	0.001	0.001	0.001	0.0038	<0.002	<0.002	<0.002	-	<0.002	<0.002		

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-WD-23 (n=7)								DH12-WD-01 (n=3)								DH12-WD-25A (n=7)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.60	8.10	7.90	0.18	7.80	8.00	8.10	8.10	6.90	7.40	7.30	0.22	7.20	7.40	7.40	7.40	6.70	7.90	7.30	0.41	7.10	7.50	7.60	7.80
Alkalinity	mg/L as CaCO ₃	170	180	180	6.4	170	180	180	180	30	74	56	19	48	65	70	73	63	81	71	5.3	70	70	73	80
Electrical Conductivity (EC)	µS/cm	310	350	330	20	310	330	350	350	87	160	130	32	120	150	150	160	140	180	160	12	150	160	170	180
Total Dissolved Solids (TDS)	mg/L	200	250	220	17	210	220	240	250	52	100	87	25	78	100	100	100	98	120	110	8	100	100	120	120
Total Suspended Solids (TSS)	mg/L as CaCO ₃	1900	15000	5500	4300	2300	4200	6500	13000	38	1400	520	590	99	160	760	1200	150	1600	590	450	310	430	680	1300
Total Hardness	mg/L as CaCO ₃	170	190	180	5.1	180	180	190	190	37	71	57	15	50	64	68	70	71	82	76	3.9	74	75	79	82
MAJOR IONS																									
Calcium (Ca)	mg/L	56	61	58	1.8	57	58	60	60	12	23	19	4.8	17	22	23	23	22	25	24	1.1	23	23	24	25
Magnesium (Mg)	mg/L	7.9	9	8.4	0.35	8.1	8.4	8.6	8.8	1.3	3.2	2.3	0.77	1.8	2.2	2.7	3.1	3.8	4.7	4.2	0.31	4	4.1	4.4	4.7
Potassium (K)	mg/L	0.05	2.2	1.6	0.69	1.6	1.9	2.1	2.2	0.45	0.87	0.7	0.18	0.62	0.78	0.83	0.86	0.05	0.94	0.57	0.27	0.5	0.56	0.73	0.92
Sodium (Na)	mg/L	0.00005	2.4	1.8	0.76	1.9	2.1	2.2	2.3	2.2	4.9	3.6	1.1	2.9	3.6	4.3	4.8	0.00005	1.7	1.4	0.56	1.5	1.6	1.6	1.7
Chloride (Cl)	mg/L	0.52	0.81	0.66	0.08	0.63	0.67	0.67	0.77	0.6	0.82	0.71	0.09	0.66	0.71	0.77	0.81	0.55	0.8	0.64	0.089	0.59	0.6	0.7	0.79
Fluoride (F)	mg/L	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	0.025	0.15	0.067	0.059	0.025	0.025	0.088	0.14	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05
Sulphate (SO ₄)	mg/L	0.05	0.13	0.093	0.029	0.075	0.1	0.11	0.13	9.3	11	10	0.71	9.8	10	11	11	6.7	8.5	8	0.55	7.9	8	8.3	8.5
METALS																									
Aluminum (Al)	mg/L	0.007	0.023	0.015	0.0059	0.009	0.017	0.02	0.022	0.037	0.12	0.069	0.038	0.042	0.047	0.085	0.11	0.02	0.04	0.028	0.0063	0.024	0.024	0.031	0.037
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.0084	0.017	0.0015	0.0015	0.0015	0.035	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.008	0.014	0.011	0.0017	0.01	0.01	0.011	0.013
Barium (Ba)	mg/L	0.026	0.033	0.029	0.0022	0.027	0.028	0.03	0.032	0.006	0.023	0.012	0.0078	0.0065	0.007	0.015	0.021	0.005	0.008	0.0069	0.00083	0.007	0.007	0.007	0.0077
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	0.005	0.012	0.006	0.0024	0.005	0.005	0.005	0.0099	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00005	0.0002	0.0001	0.000071	0.00005	0.00005	0.00013	0.00019	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	0.0015	0.001	0.00033	0.0008	0.0008	0.0012	0.0014	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0001	0.001	0.00087	0.00031	0.001	0.001	0.001	0.001	0.003	0.009	0.0063	0.0025	0.005	0.007	0.008	0.0088	0.0006	0.001	0.00094	0.00014	0.001	0.001	0.001	0.001
Iron (Fe)	mg/L	1.4	2	1.8	0.21	1.6	1.9	1.9	2	0.024	0.84	0.3	0.38	0.035	0.045	0.44	0.76	3.7	4.4	4.2	0.25	4.1	4.3	4.4	4.4
Lead (Pb)	mg/L	0.0001	0.0005	0.00044	0.00014	0.0005	0.0005	0.0005	0.0005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.16	0.19	0.17	0.012	0.17	0.17	0.18	0.19	0.054	0.3	0.17	0.1	0.11	0.16	0.23	0.29	0.27	0.31	0.29	0.016	0.28	0.29	0.3	0.31
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	0.001	0.008	0.0026	0.0024	0.001	0.001	0.003	0.0068	0.001	0.033	0.012	0.015	0.001	0.001	0.017	0.03	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	0.0015	0.005	0.0027	0.0016	0.0015	0.0015	0.0033	0.0047	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.002	0.05	0.0089	0.017	0.002	0.002	0.002	0.036	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	0.0001	0.002	0.0017	0.00066	0.002	0.002	0.002	0.002
Silver (Ag)	mg/L	0.00005	0.00006	0.000051	0.0000035	0.00005	0.00005	0.00005	0.000057	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00003	0.00005	0.000047	0.000007	0.00005	0.00005	0.00005	0.00005
Strontium (Sr)	mg/L	0.056	0.064	0.058	0.0026	0.057	0.058	0.059	0.063	0.025	0.08	0.051	0.023	0.037	0.048	0.064	0.077	0.044	0.054	0.048	0.0033	0.046	0.048	0.05	0.053
Thallium (Tl)	mg/L	0.00002	0.00015	0.00013	0.000045	0.00015	0.00015	0.00015	0.00015	<0.0003	<0.0003	<0.0003	-	<0.0003	<0.0003	<0.0003	<0.0003	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	0.001	0.002	0.0016	0.00049	0.001	0.002	0.002	0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	0.005	0.021	0.0073	0.0056	0.005	0.005	0.005	0.016	0.005	0.11	0.046	0.044	0.015	0.025	0.066	0.099	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Vanadium (V)	mg/L	0.001	0.003	0.0021	0.00064	0.002	0.002	0.0025	0.003	0.001	0.002	0.0013	0.00047	0.001	0.001	0.0015	0.0019	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.037	0.0074	0.012	0.0025	0.0025	0.0025	0.027	0.0025	0.86	0.29	0.4	0.0058	0.009	0.44	0.78	0.0025	0.011	0.0053	0.0035	0.0025	0.0025	0.008	0.011
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.0								

Notes:
Values with the less than sign ("<") indicate concentrations below the laboratory method detection limit.
For the purposes of statistical calculations, values less than the laboratory detection limit were assumed to be equal to one-half the detection limit
Dashes ("-") indicate the statistic was not calculated.

2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

Parameter	Unit	DH12-WD-25B (n=7)								DH12-WD-26 (n=7)								DH12-WD-27A (n=3)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile	Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS																									
pH	pH units	7.20	8.00	7.60	0.28	7.50	7.70	7.80	7.90	6.90	8.00	7.70	0.36	7.70	7.80	7.90	8.00	6.50	8.20	7.70	0.63	7.90	7.90	8.10	8.20
Alkalinity	mg/L as CaCO ₃	98	140	120	14	110	120	130	130	120	170	140	14	130	140	150	160	28	150	110	42	120	120	120	150
Electrical Conductivity (EC)	µS/cm	210	270	240	22	220	250	250	270	270	370	300	34	280	300	320	360	68	290	220	80	250	250	260	290
Total Dissolved Solids (TDS)	mg/L	10	180	140	55	140	160	170	180	150	270	210	33	200	210	220	250	52	170	140	44	150	160	170	170
Total Suspended Solids (TSS)	mg/L as CaCO ₃	2900	20000	7900	5500	4200	5800	9400	17000	23	600	150	190	40	48	130	470	310	2700	1400	1000	380	1200	2400	2600
Total Hardness	mg/L as CaCO ₃	100	140	120	11	110	120	130	130	94	120	110	10	97	110	120	120	29	150	110	42	120	120	140	140
MAJOR IONS																									
Calcium (Ca)	mg/L	33	45	40	3.6	38	41	42	44	31	40	35	3.5	32	34	38	40	6.8	42	31	13	34	34	39	42
Magnesium (Mg)	mg/L	4.2	5.7	4.8	0.46	4.5	4.7	5	5.5	3.6	6.7	4.8	0.93	4.3	4.4	5.1	6.2	2.9	9.9	7.8	2.6	8	8.8	9.5	9.8
Potassium (K)	mg/L	0.05	0.77	0.58	0.22	0.62	0.64	0.67	0.75	0.82	1.2	1	0.12	0.93	0.95	1.1	1.2	0.58	1.2	1	0.23	0.91	1.1	1.1	1.2
Sodium (Na)	mg/L	3	6.6	4.8	1	4.5	4.6	5.3	6.3	11	46	26	11	19	24	30	41	1.7	4.7	3.6	1.1	2.9	4.3	4.5	4.6
Chloride (Cl)	mg/L	0.67	2.1	0.99	0.46	0.73	0.81	0.97	1.8	0.72	3.4	1.9	1	1.1	1.3	2.8	3.2	0.41	0.8	0.64	0.13	0.6	0.68	0.71	0.78
Fluoride (F)	mg/L	0.025	0.05	0.029	0.0087	0.025	0.025	0.025	0.043	0.25	0.51	0.38	0.094	0.3	0.4	0.46	0.5	0.025	0.11	0.066	0.036	0.025	0.07	0.1	0.11
Sulphate (SO ₄)	mg/L	0.77	5.9	3.2	2.2	1.2	4.5	4.9	5.7	3.4	59	16	19	4.2	5.1	17	49	4.8	13	11	3.1	12	12	13	13
METALS																									
Aluminum (Al)	mg/L	0.008	0.21	0.046	0.068	0.013	0.015	0.032	0.16	0.006	0.015	0.0099	0.0026	0.009	0.009	0.011	0.014	0.002	0.021	0.011	0.0065	0.007	0.011	0.015	0.02
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.004	0.006	0.0051	0.00083	0.0045	0.005	0.006	0.006	0.004	0.009	0.005	0.0017	0.004	0.004	0.005	0.0078	0.0015	0.05	0.011	0.019	0.0015	0.0015	0.0015	0.04
Barium (Ba)	mg/L	0.013	0.026	0.02	0.0039	0.018	0.019	0.022	0.025	0.008	0.017	0.012	0.003	0.01	0.012	0.015	0.016	0.003	0.021	0.014	0.0059	0.015	0.015	0.016	0.02
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.012	0.017	0.014	0.0019	0.012	0.013	0.015	0.017	0.005	0.01	0.006	0.002	0.005	0.005	0.005	0.009
Cadmium (Cd)	mg/L	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.00001	0.0001	0.000052	0.000029	0.00005	0.00005	0.00005	0.00009
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	0.00025	0.0007	0.00031	0.00016	0.00025	0.00025	0.00025	0.00057	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0001	0.001	0.00087	0.00031	0.001	0.001	0.001	0.001	0.0006	0.003	0.0012	0.00074	0.001	0.001	0.001	0.0024	0.0004	0.001	0.00088	0.00024	0.001	0.001	0.001	0.001
Iron (Fe)	mg/L	3	4.5	3.6	0.51	3.3	3.5	3.9	4.5	0.73	1.4	1.2	0.21	1.1	1.2	1.3	1.4	0.005	0.089	0.022	0.034	0.005	0.005	0.005	0.072
Lead (Pb)	mg/L	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005	0.00005	0.0005	0.00044	0.00016	0.0005	0.0005	0.0005	0.0005	0.00005	0.0005	0.00041	0.00018	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.36	0.44	0.39	0.028	0.37	0.39	0.41	0.44	0.22	0.28	0.25	0.019	0.23	0.25	0.26	0.27	0.013	0.057	0.045	0.017	0.047	0.053	0.057	0.057
Mercury (Hg)	mg/L	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.000043	0.000017	0.00005	0.00005	0.00005	0.00005	0.0000013	0.00005	0.00004	0.00002	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.005	0.012	0.0073	0.0022	0.006	0.006	0.008	0.011	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Selenium (Se)	mg/L	0.002	0.05	0.0089	0.017	0.002	0.002	0.002	0.036	0.002	0.05	0.0089	0.017	0.002	0.002	0.002	0.036	0.002	0.05	0.012	0.019	0.002	0.002	0.002	0.04
Silver (Ag)	mg/L	0.00002	0.00005	0.000046	0.00001	0.00005	0.00005	0.00005	0.00005	0.00001	0.00005	0.000044	0.000014	0.00005	0.00005	0.00005	0.00005	0.0000005	0.0001	0.000051	0.00003	0.00005	0.00005	0.00005	0.00009
Strontium (Sr)	mg/L	0.053	0.078	0.065	0.0083	0.06	0.064	0.072	0.077	0.052	0.083	0.064	0.01	0.057	0.063	0.07	0.08	0.014	0.14	0.075	0.043	0.052	0.076	0.087	0.13
Thallium (Tl)	mg/L	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.000005	0.00015	0.00013	0.000051	0.00015	0.00015	0.00015	0.00015	0.0000005	0.00015	0.00012	0.000058	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	0.001	0.011	0.0024	0.0035	0.001	0.001	0.001	0.008	0.001	0.002	0.0011	0.00035	0.001	0.001	0.001	0.0017	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Tungsten (W)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	0.005	0.029	0.011	0.0082	0.005	0.005	0.013	0.025	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	0.001	0.003	0.002	0.00093	0.001	0.002	0.003	0.003	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.024	0.0075	0.0082	0.0025	0.0025	0.0093	0.022	0.0025	0.23	0.037	0.078	0.0025	0.0025	0.0095	0.16	0.0025	0.028	0.0083	0.0099	0.0025	0.0025	0.006	0.024
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS																									
Total Cyanide	mg/L	0.001	0.012	0.0026	0.0038	0.001	0.001	0.001	0.0087	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002			

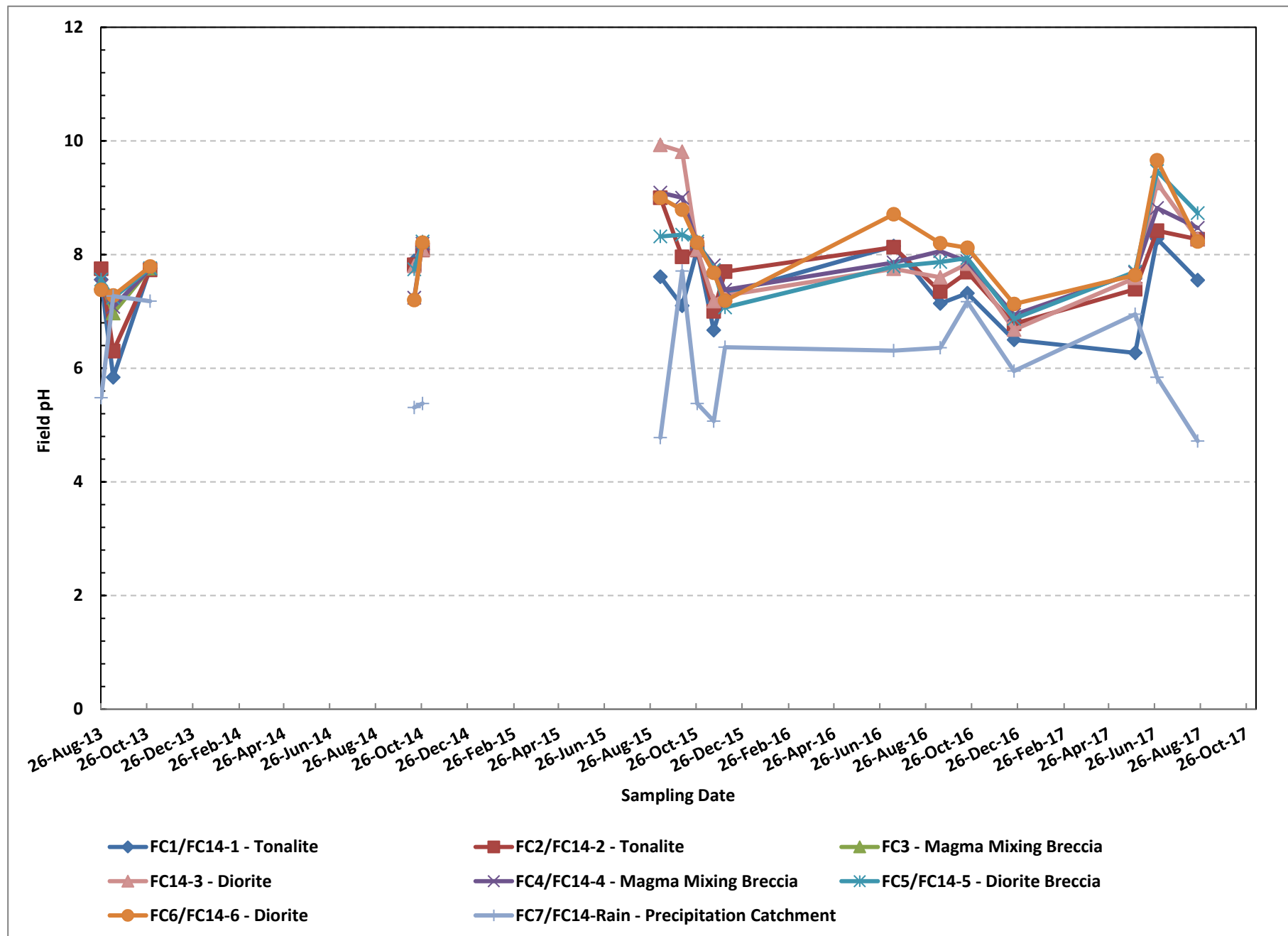
Notes:
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Dashes ("-") indicate the statistic was not calculated.

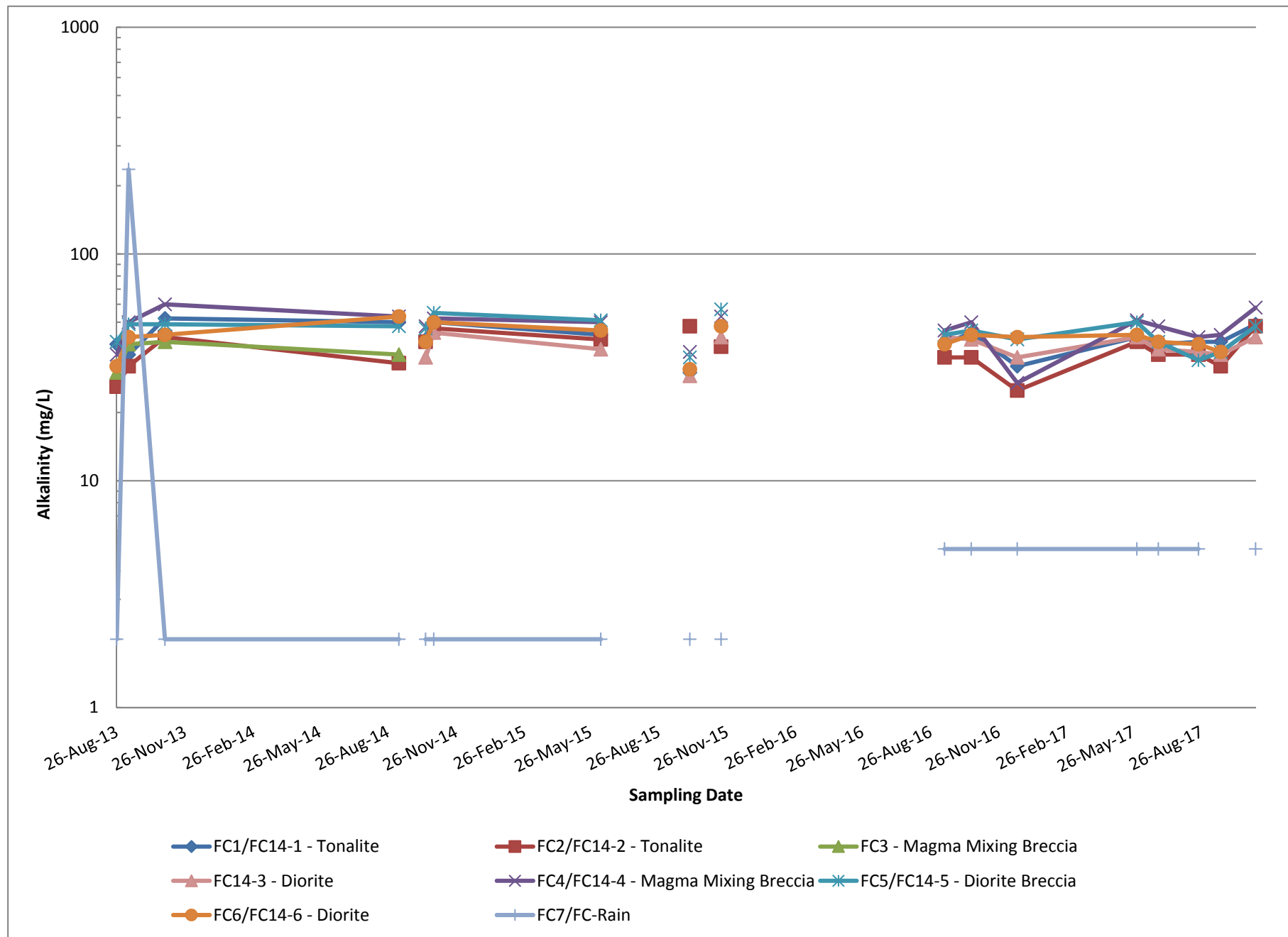
2014 Statistical Summary of Updated Baseline Groundwater Quality Dataset

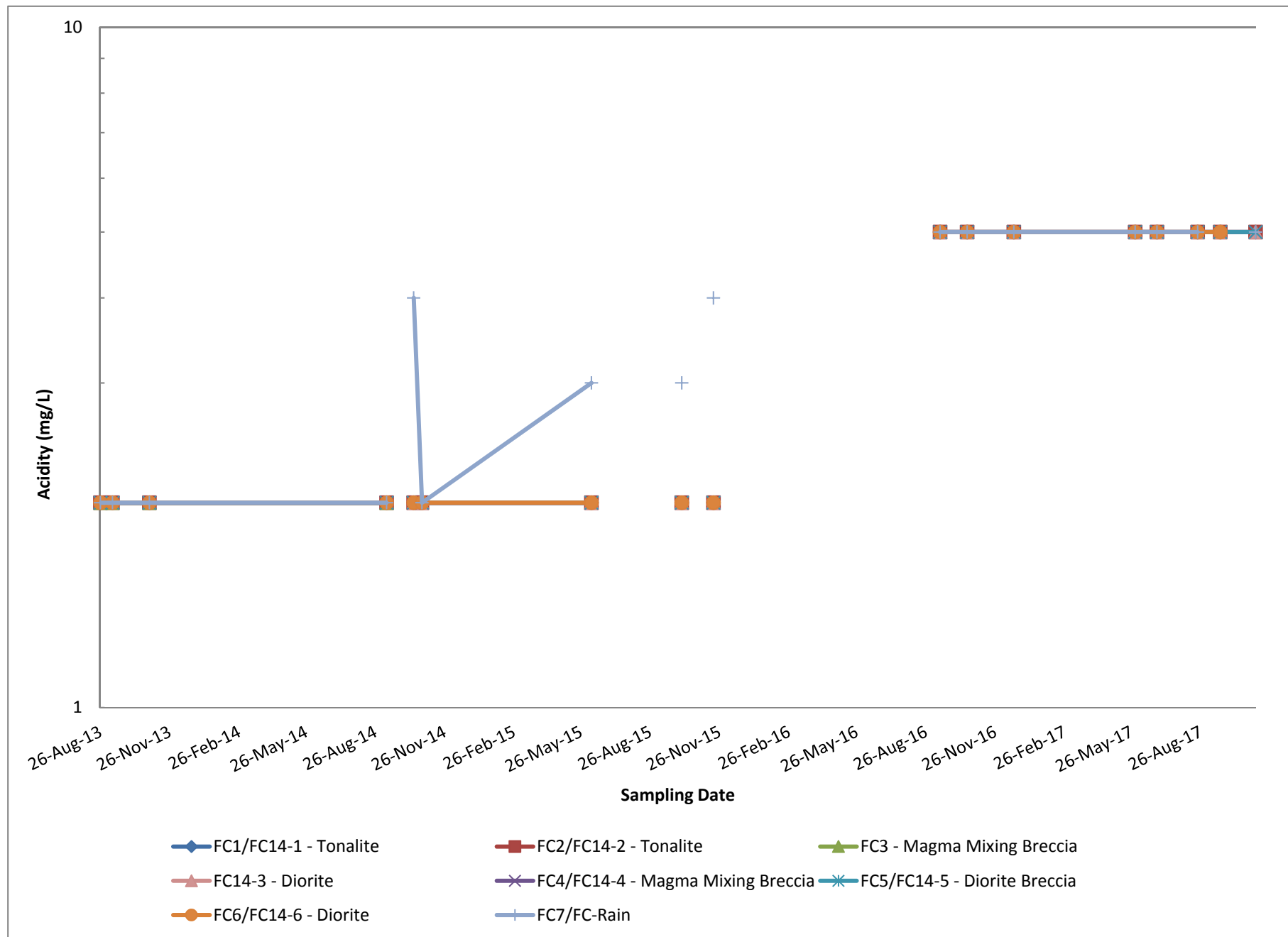
Parameter	Unit	DH12-WD-27B (n=5)							
		Minimum	Maximum	Average	Standard Deviation	25th percentile	Median	75 th percentile	95 th percentile
GENERAL PARAMETERS									
pH	pH units	6.09	8.13	7.46	0.8	7.22	7.85	8.01	8.11
Alkalinity	mg/L as CaCO ₃	21	136	88.2	53	25	125	134	136
Electrical Conductivity (EC)	µS/cm	59	272	186	100	69	259	271	272
Total Dissolved Solids (TDS)	mg/L	2180	6100	3936	1476	2490	3960	4950	5870
Total Suspended Solids (TSS)	mg/L as CaCO ₃	58	608	221	198	110	152	176	522
Total Hardness	mg/L as CaCO ₃	23	157	91	56	26.2	114	136	153
MAJOR IONS									
Calcium (Ca)	mg/L	4.8	45	26	17	5.7	33	39	44
Magnesium (Mg)	mg/L	0.61	0.9	0.78	0.10	0.71	0.8	0.86	0.89
Potassium (K)	mg/L	1.4	8.1	3.4	2.4	2.0	2.6	3.1	7.1
Sodium (Na)	mg/L	0.025	0.17	0.05	0.06	0.025	0.025	0.025	0.14
Chloride (Cl)	mg/L	2.6	11	6.6	3.3	2.9	7.6	9.1	10
Fluoride (F)	mg/L	0.38	1.2	0.88	0.29	0.77	0.96	1.1	1.2
Sulphate (SO ₄)	mg/L	4.3	14	9.7	4.1	5.2	12	13	14
METALS									
Aluminum (Al)	mg/L	0.008	0.15	0.066	0.054	0.028	0.04	0.10	0.14
Antimony (Sb)	mg/L	<0.006	<0.006	<0.006	-	<0.006	<0.006	<0.006	<0.006
Arsenic (As)	mg/L	0.0015	0.05	0.011	0.019	0.0015	0.0015	0.0015	0.040
Barium (Ba)	mg/L	0.001	0.017	0.0098	0.0072	0.001	0.014	0.016	0.017
Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
Boron (B)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd)	mg/L	0.00001	0.00005	0.000042	0.000016	0.00005	0.00005	0.00005	0.00005
Chromium (Cr)	mg/L	<0.003	<0.003	<0.003	-	<0.003	<0.003	<0.003	<0.003
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005
Copper (Cu)	mg/L	0.0004	0.005	0.0017	0.0017	0.001	0.001	0.001	0.0042
Iron (Fe)	mg/L	0.005	0.15	0.05	0.056	0.005	0.028	0.061	0.14
Lead (Pb)	mg/L	0.0001	0.0005	0.00042	0.00016	0.0005	0.0005	0.0005	0.0005
Manganese (Mn)	mg/L	0.001	0.063	0.0234	0.024	0.001	0.016	0.036	0.058
Mercury (Hg)	mg/L	0.00000125	0.00005	0.000040	0.000020	0.00005	0.00005	0.00005	0.00005
Molybdenum (Mo)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Nickel (Ni)	mg/L	0.0015	0.004	0.002	0.001	0.0015	0.0015	0.0015	0.0035
Selenium (Se)	mg/L	0.002	0.05	0.0116	0.0192	0.002	0.002	0.002	0.0404
Silver (Ag)	mg/L	0.00005	0.0001	0.00006	0.00002	0.00005	0.00005	0.00005	0.00009
Strontium (Sr)	mg/L	0.014	0.075	0.044	0.025	0.015	0.054	0.06	0.072
Thallium (Tl)	mg/L	0.000005	0.00015	0.00012	0.000058	0.00015	0.00015	0.00015	0.00015
Titanium (Ti)	mg/L	0.001	0.005	0.0018	0.0016	0.001	0.001	0.001	0.0042
Tungsten (W)	mg/L	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
Uranium (U)	mg/L	0.001	0.003	0.0016	0.0008	0.001	0.001	0.002	0.0028
Vanadium (V)	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Zinc (Zn)	mg/L	0.0025	0.166	0.0389	0.063952639	0.0025	0.0025	0.021	0.137
Zirconium (Zr)	mg/L	<0.004	<0.004	<0.004	-	<0.004	<0.004	<0.004	<0.004
OTHER PARAMETERS									
Total Cyanide	mg/L	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002
Total Ammonia (NH ₃ + NH ₄)	mg/L as N	0.01	0.12	0.042	0.04	0.02	0.02	0.04	0.10

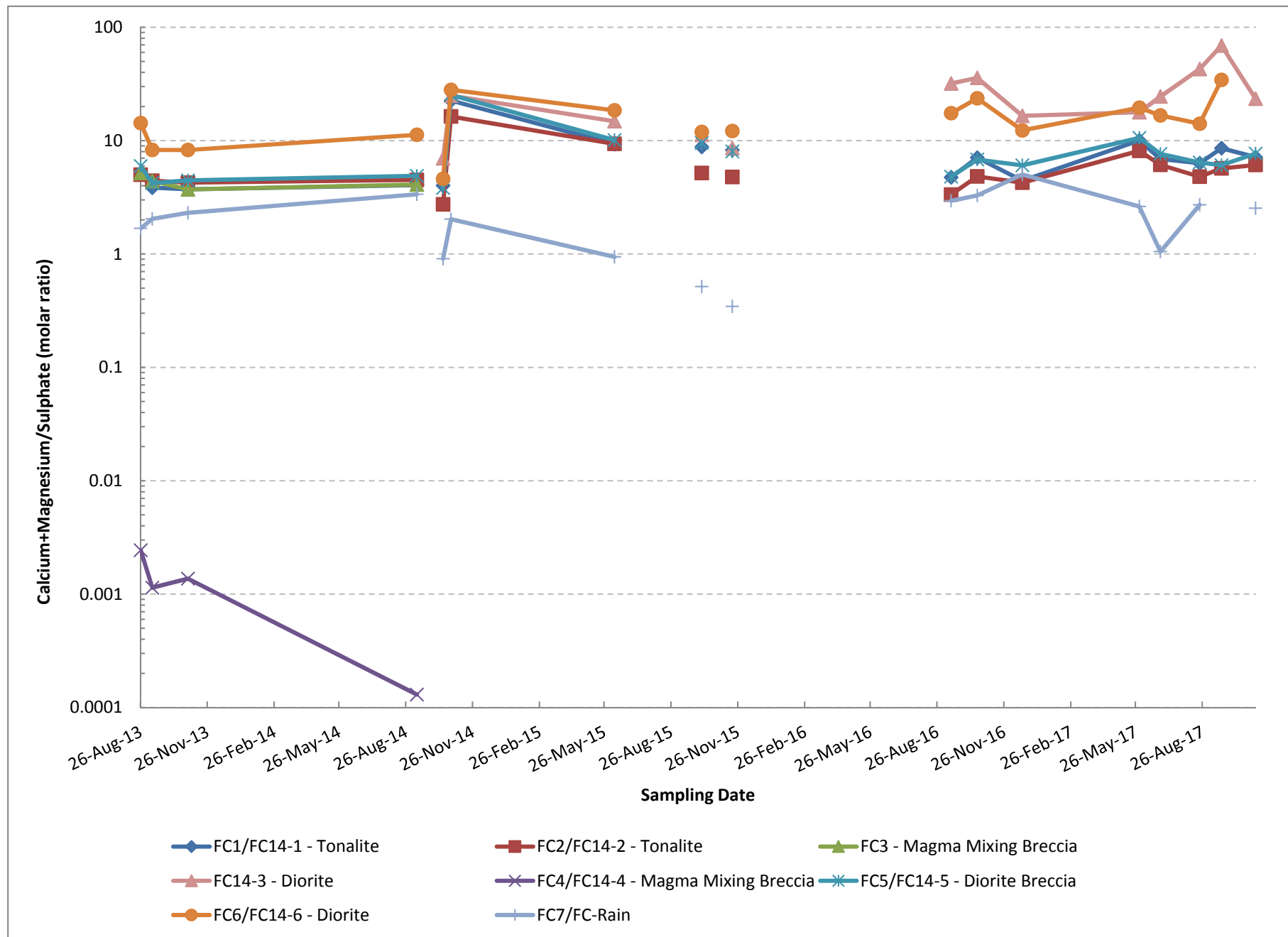
Notes:
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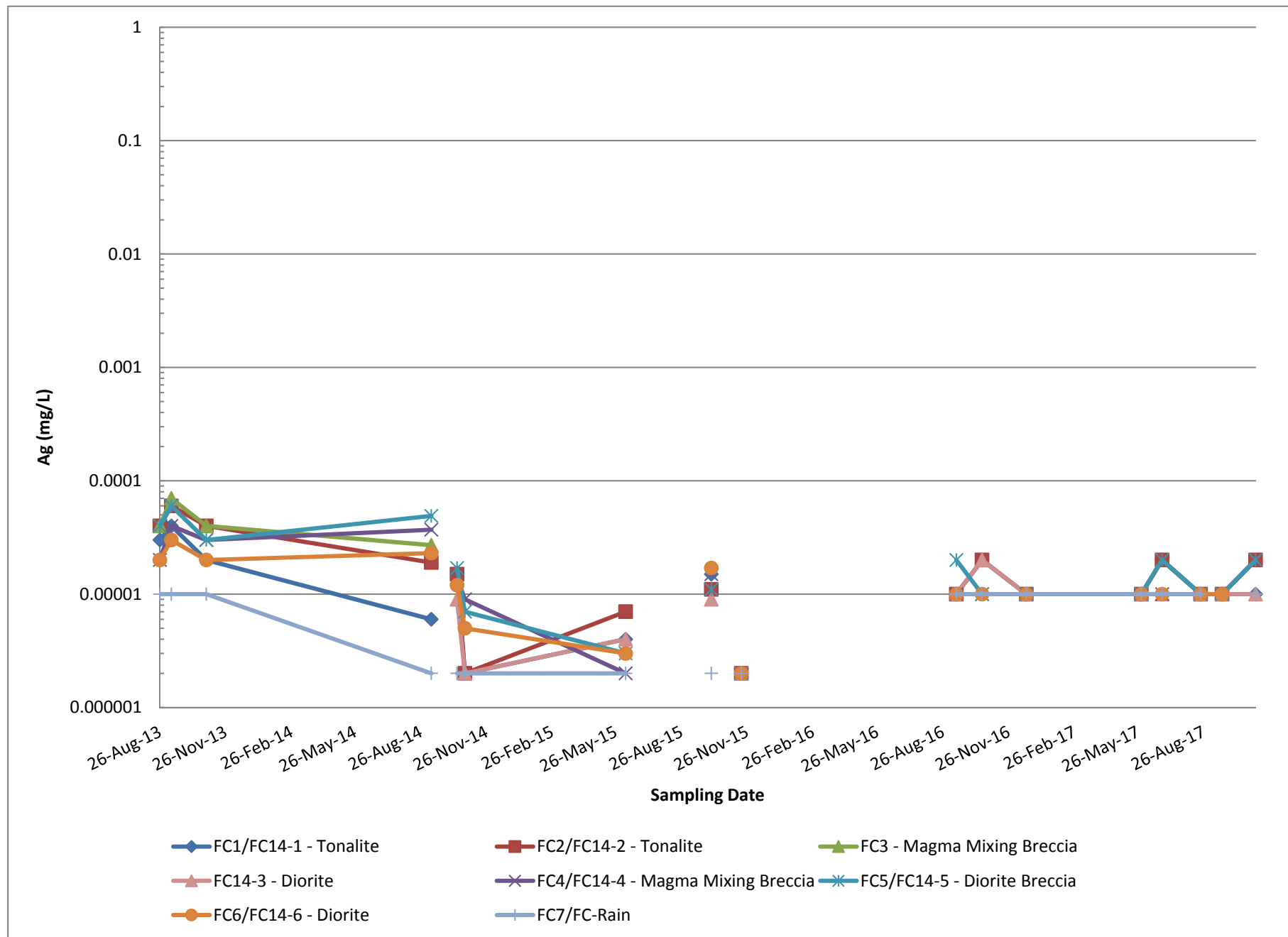
Appendix E Geochemistry: Field Cell Monitoring - Amec Foster Wheeler

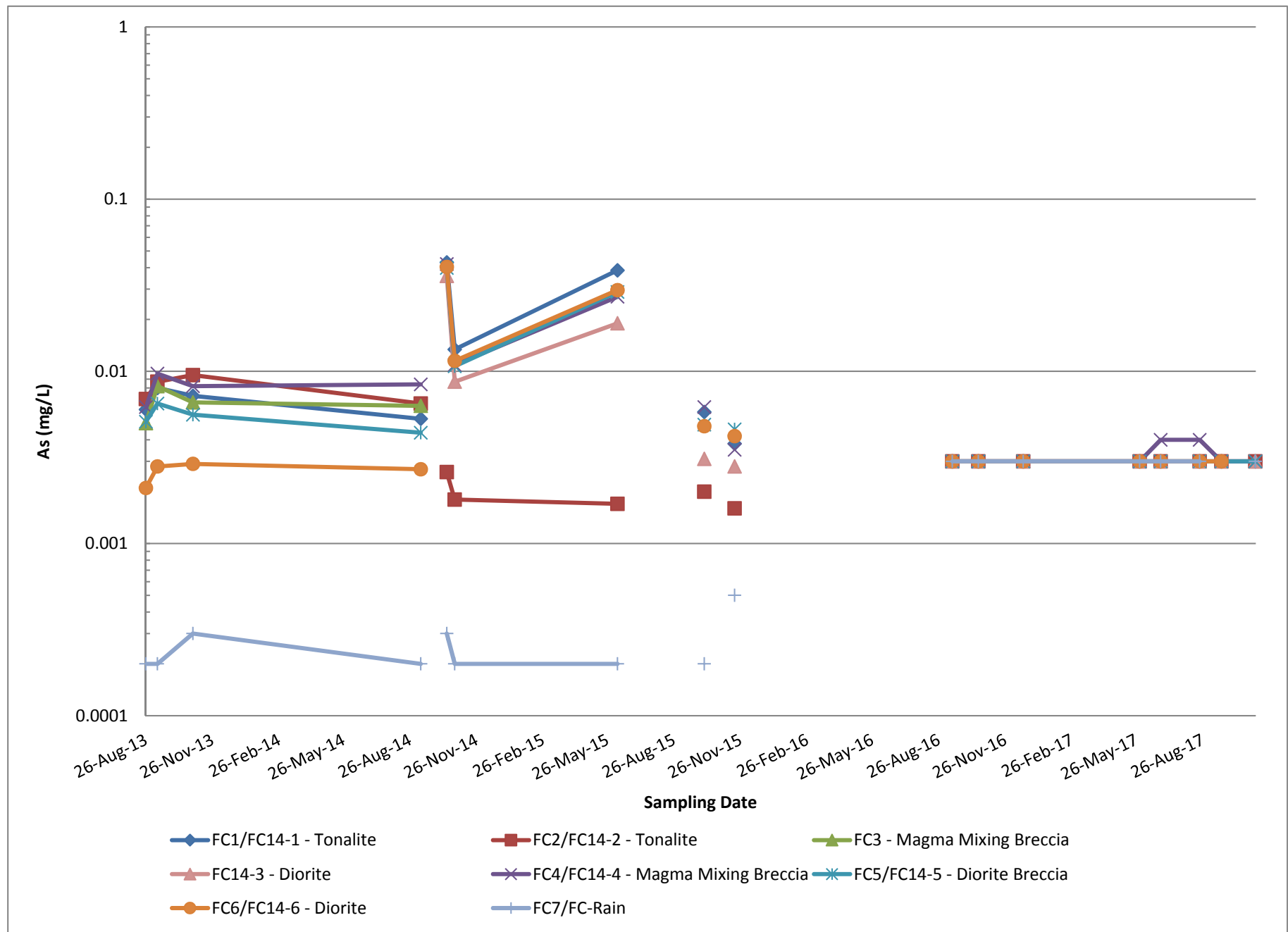


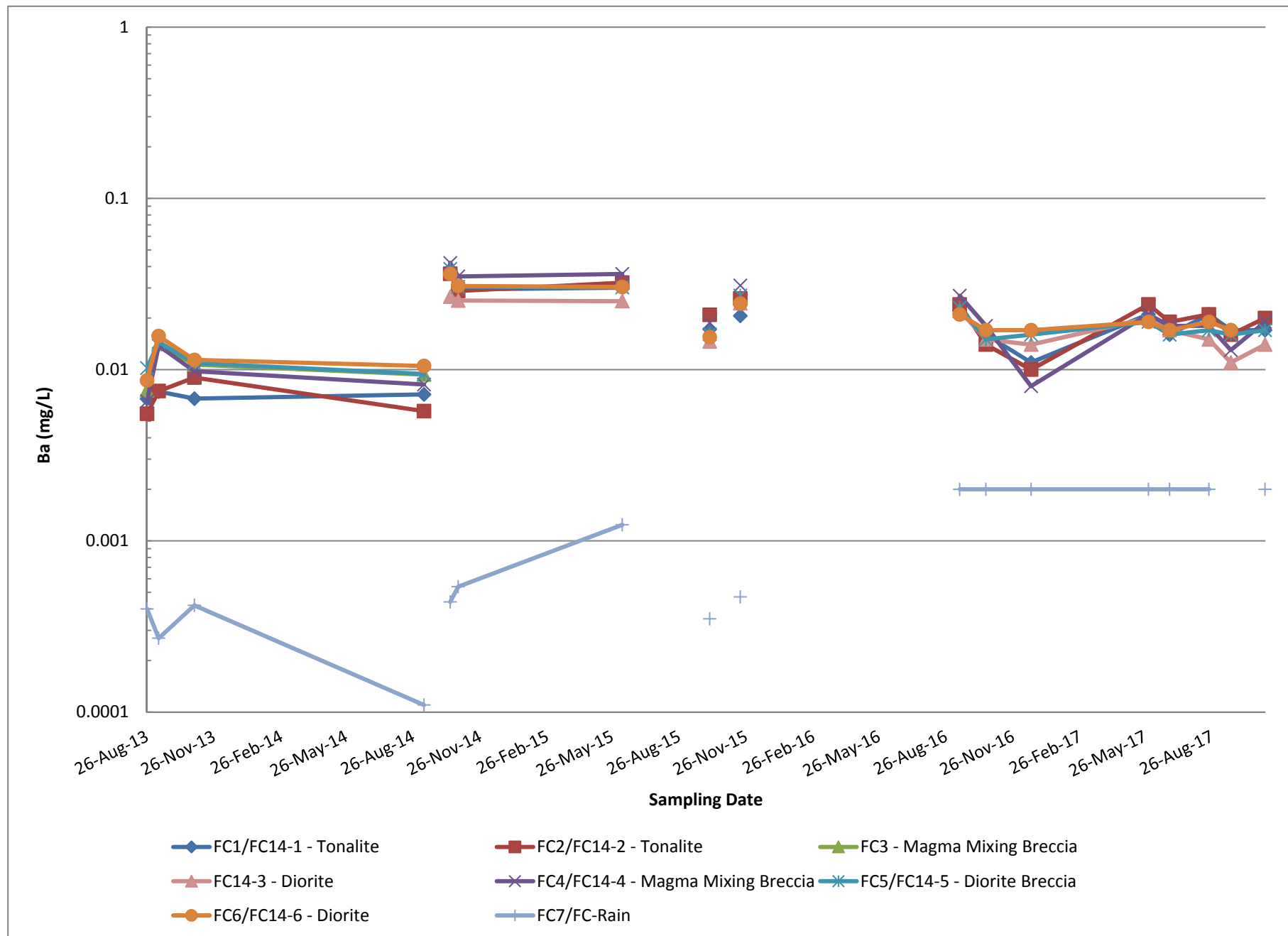


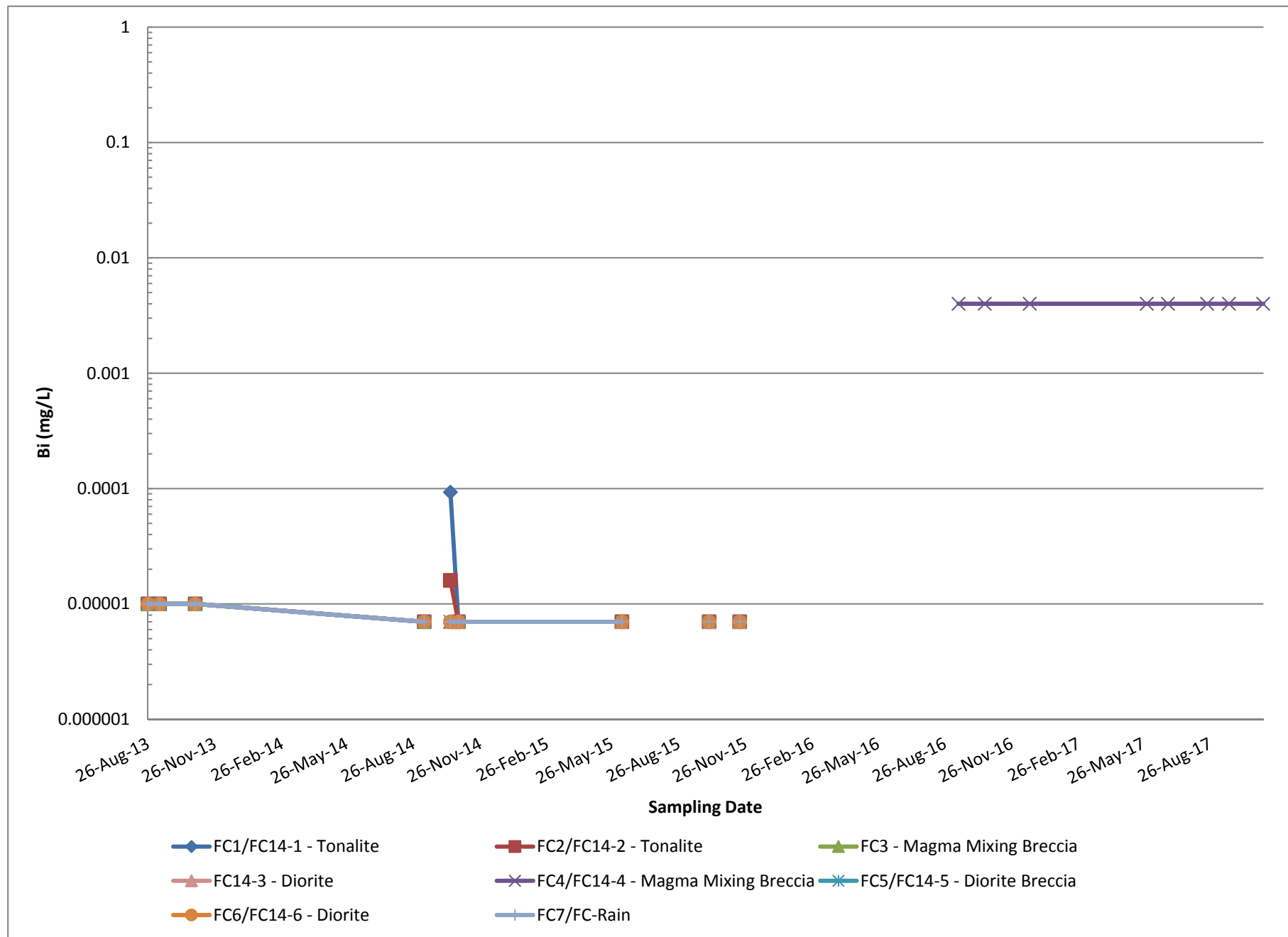


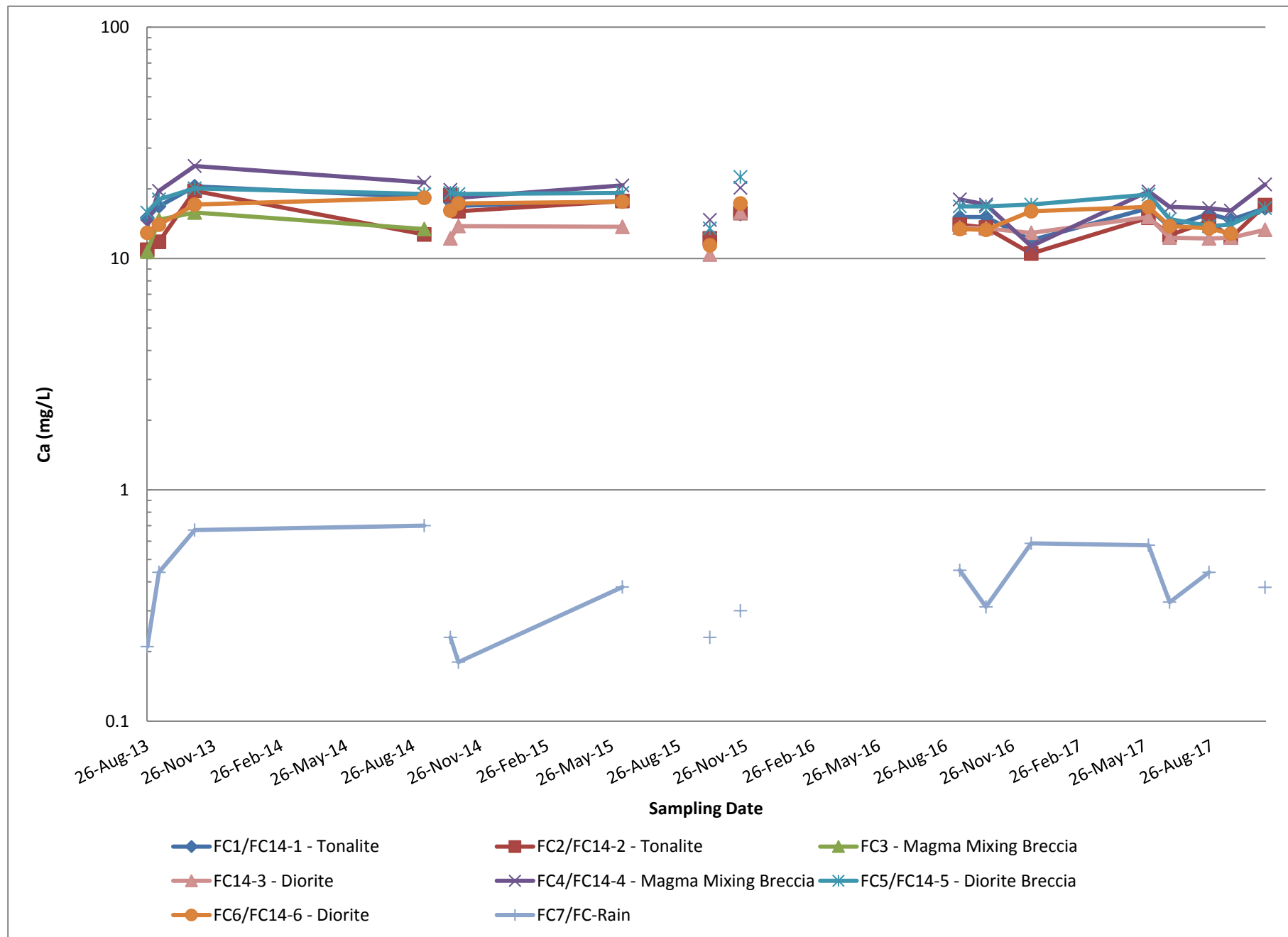


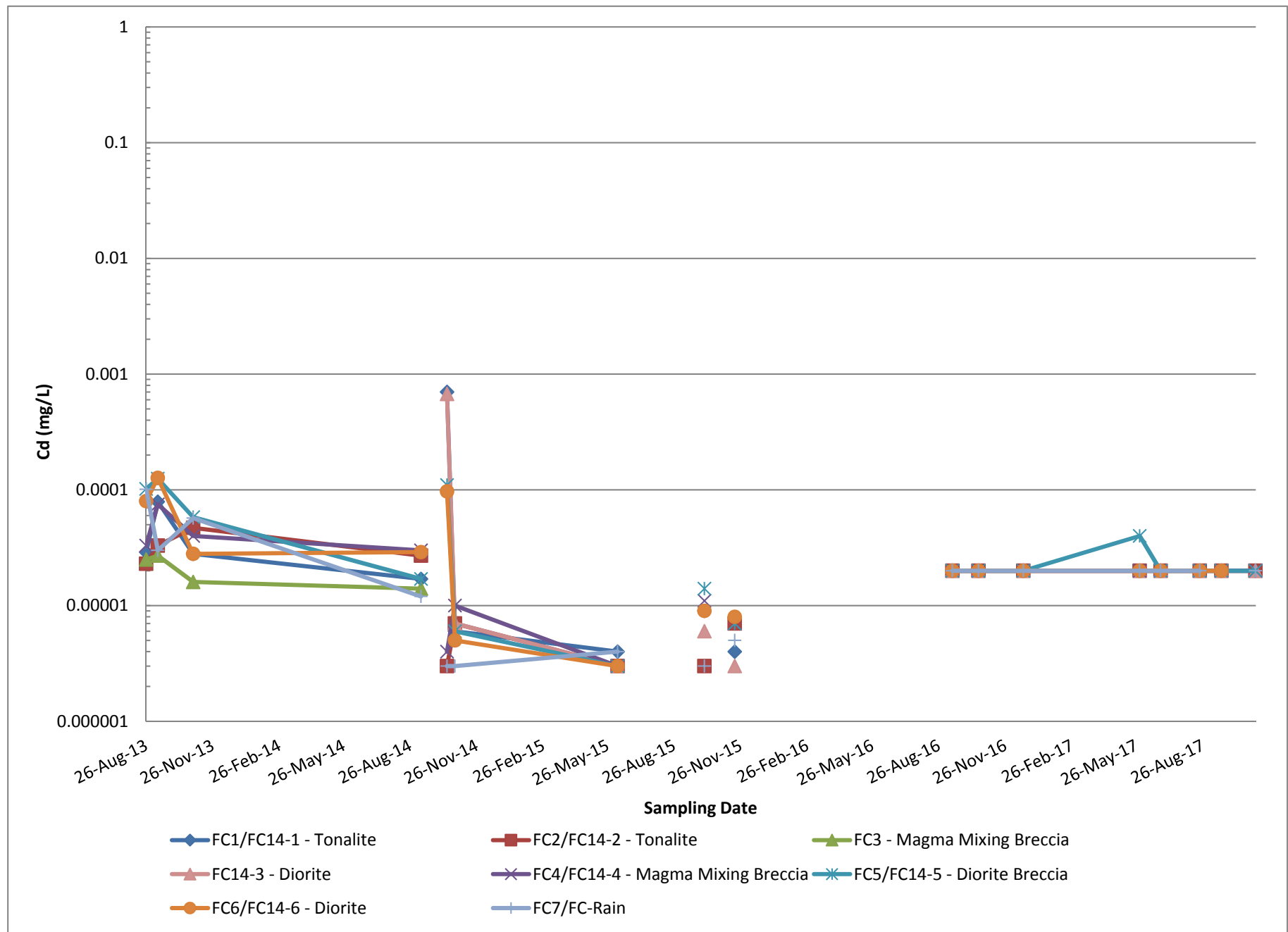


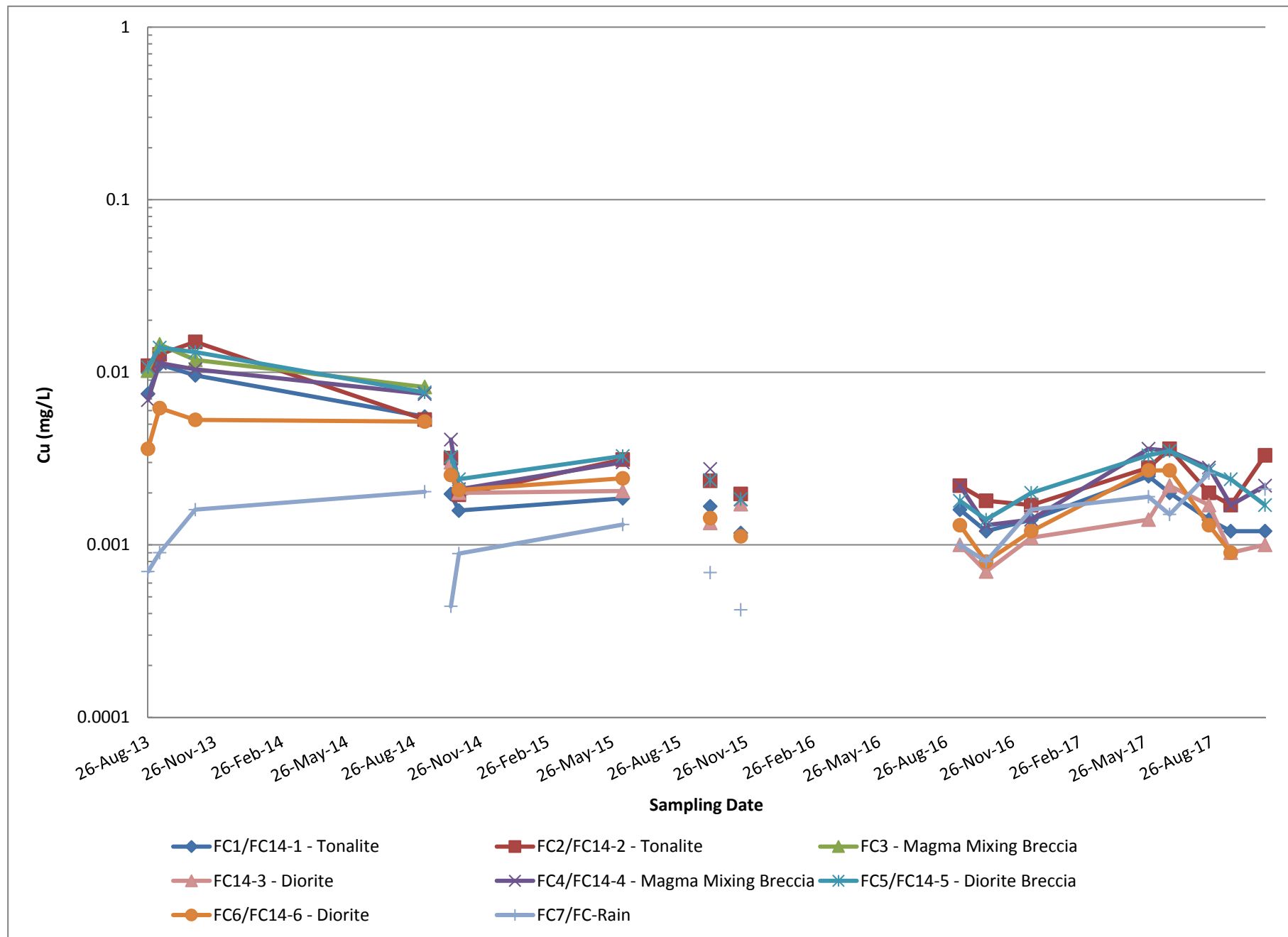


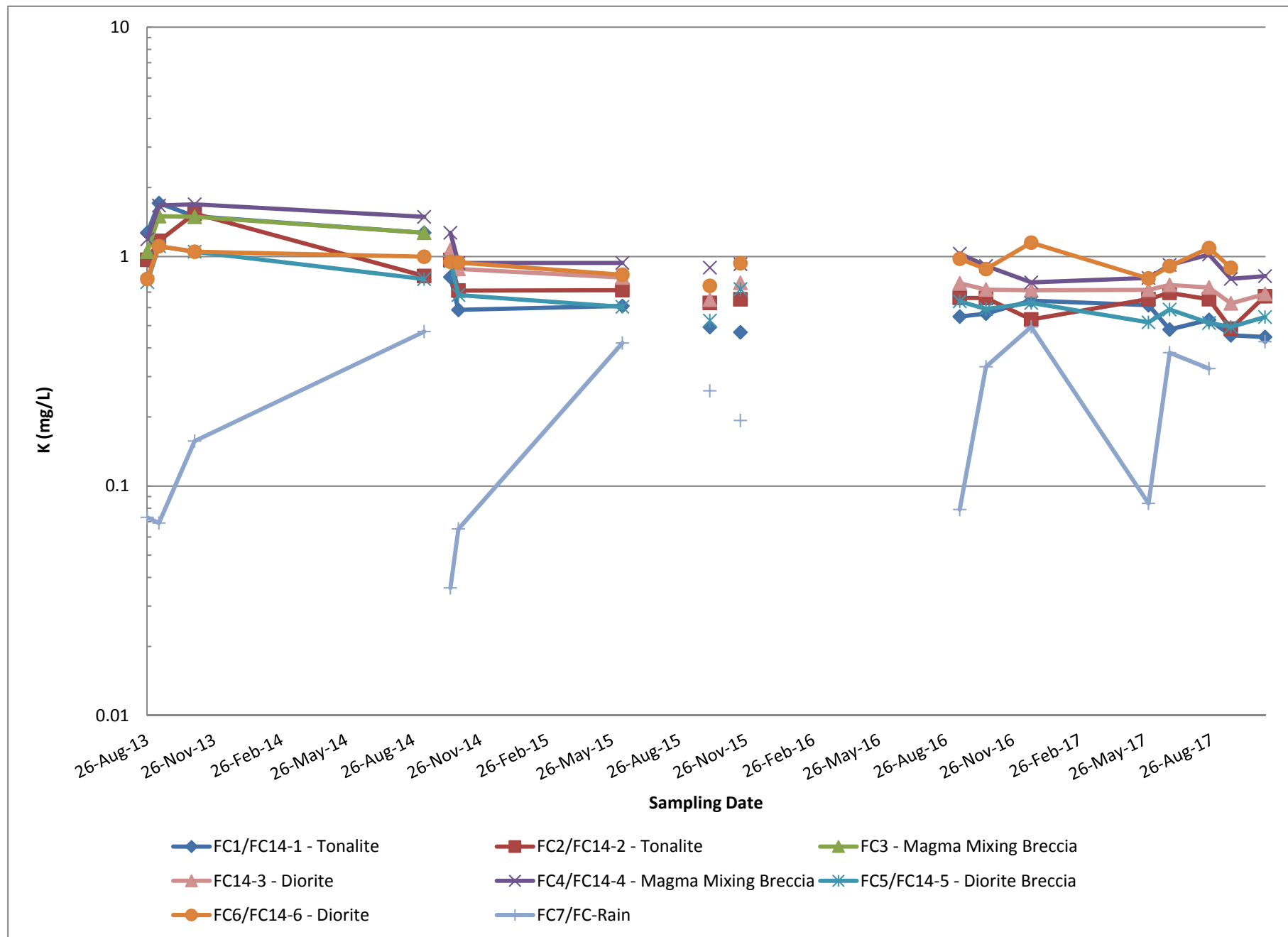


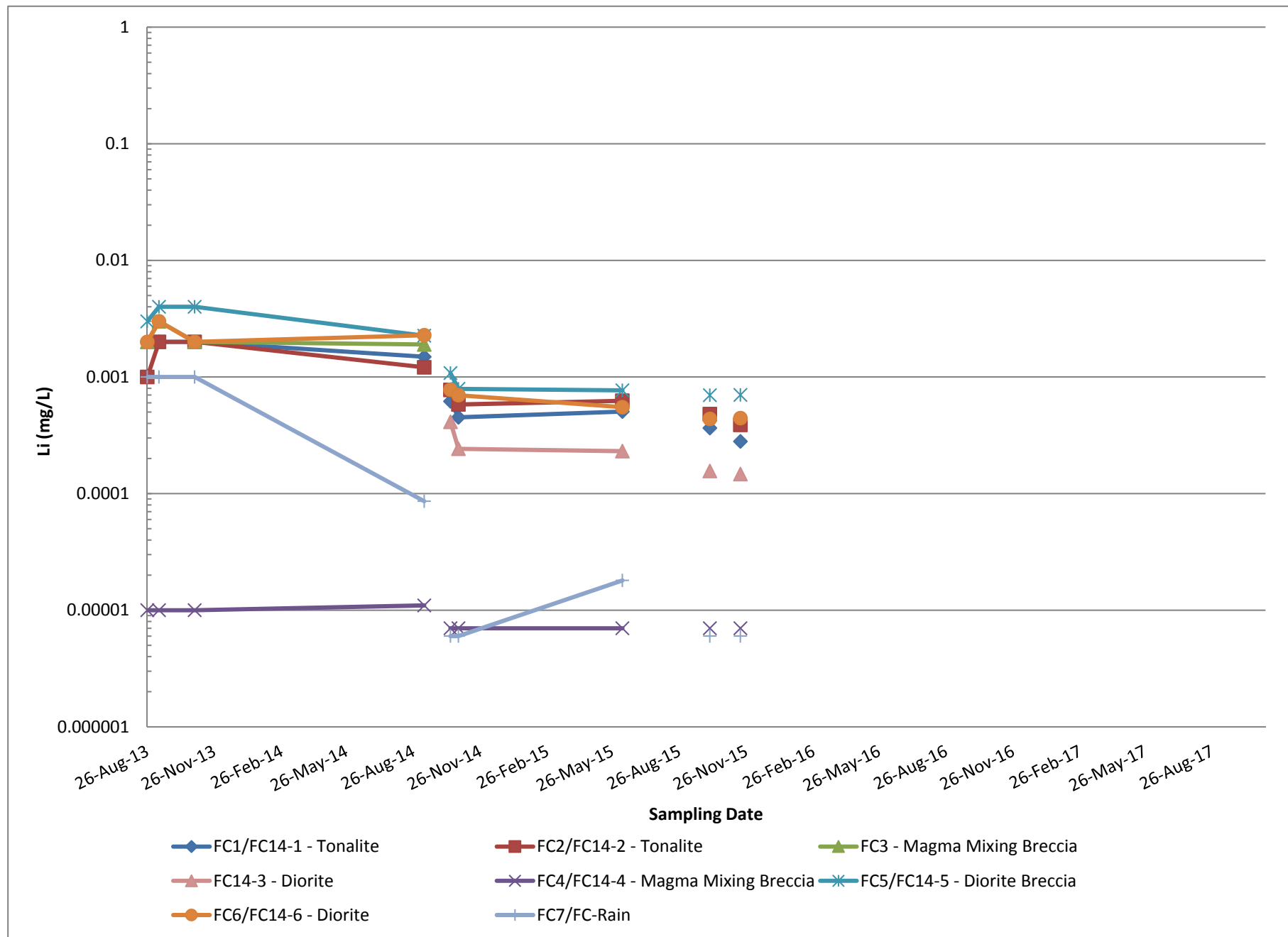


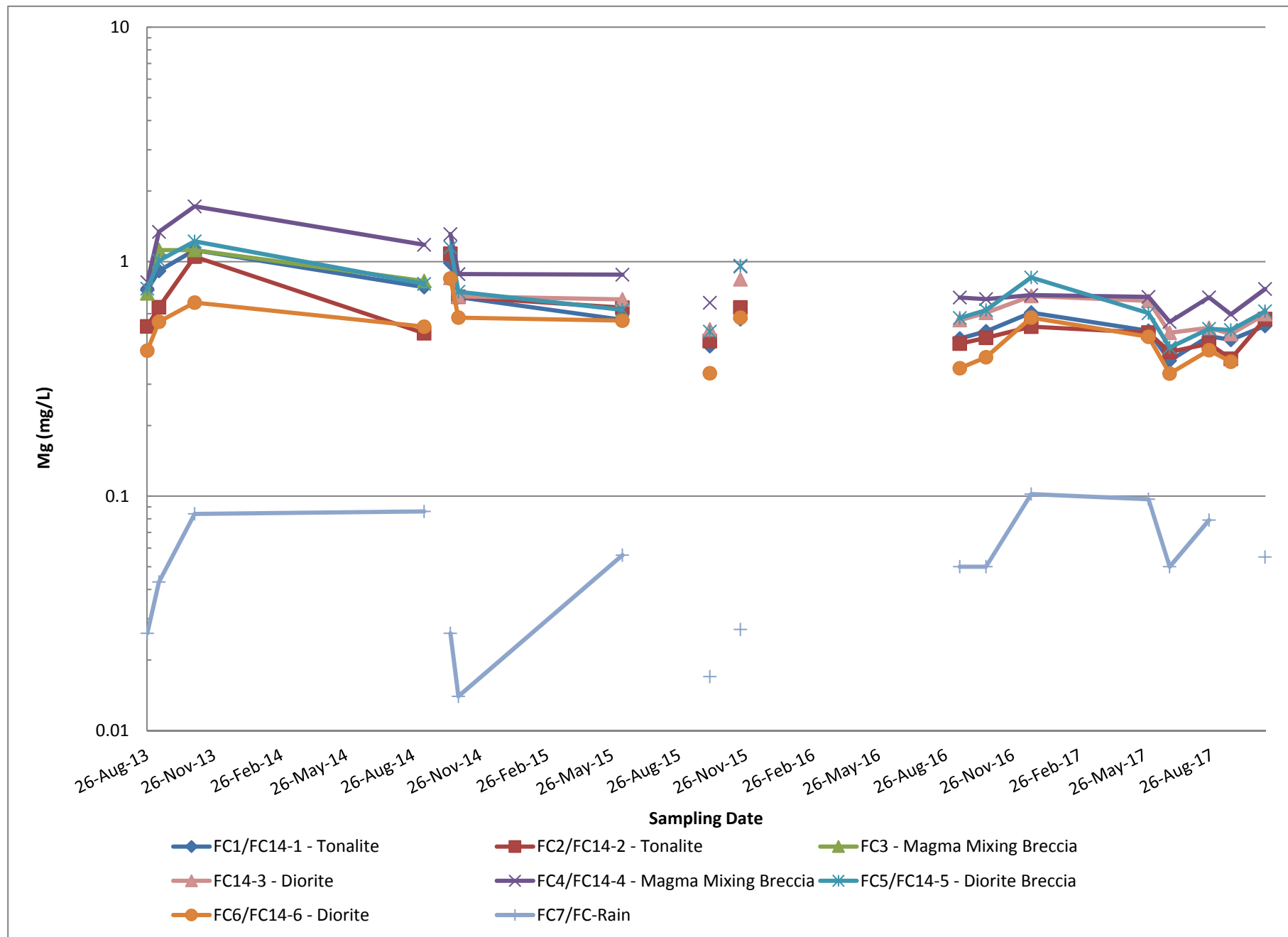


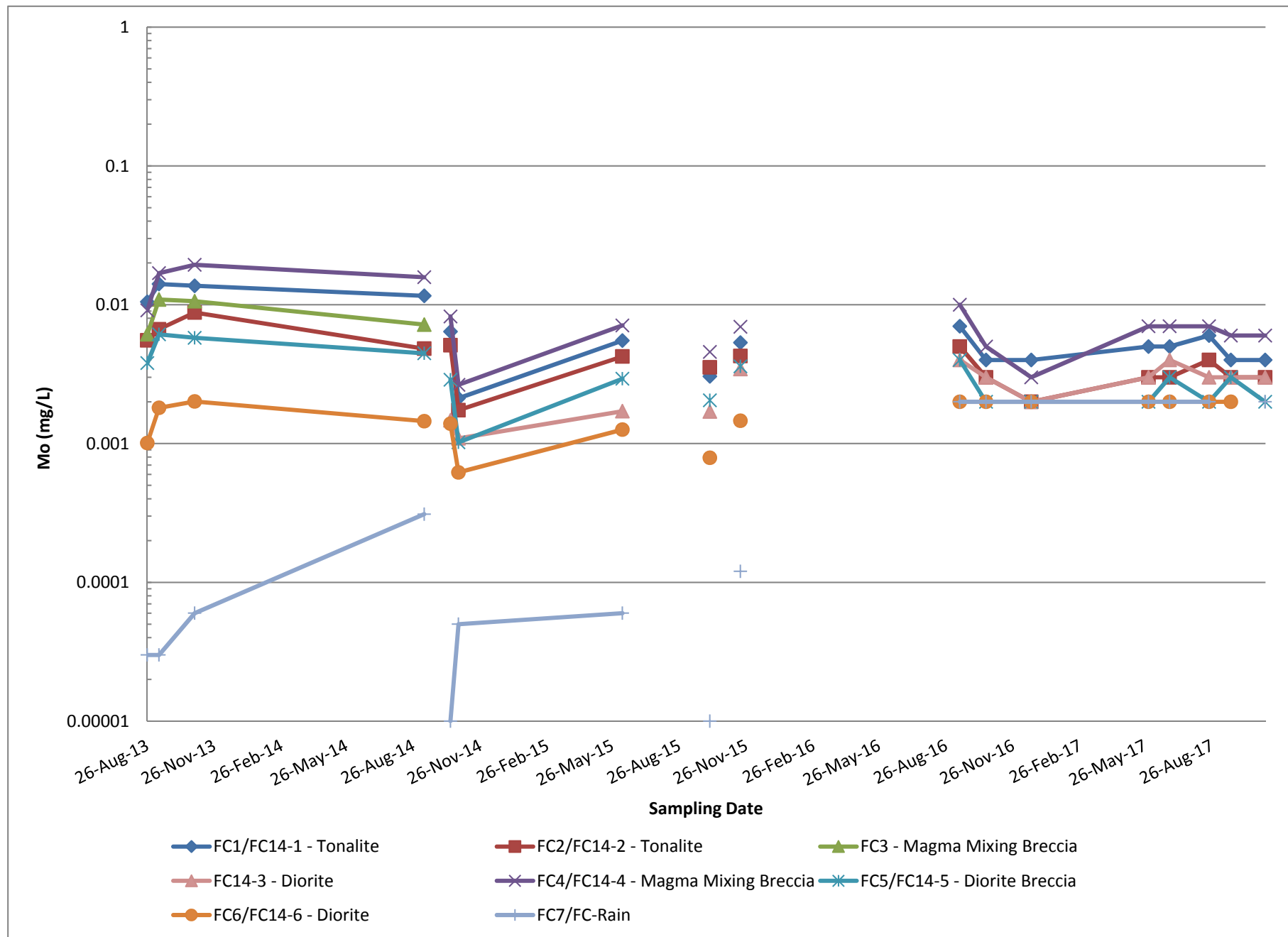


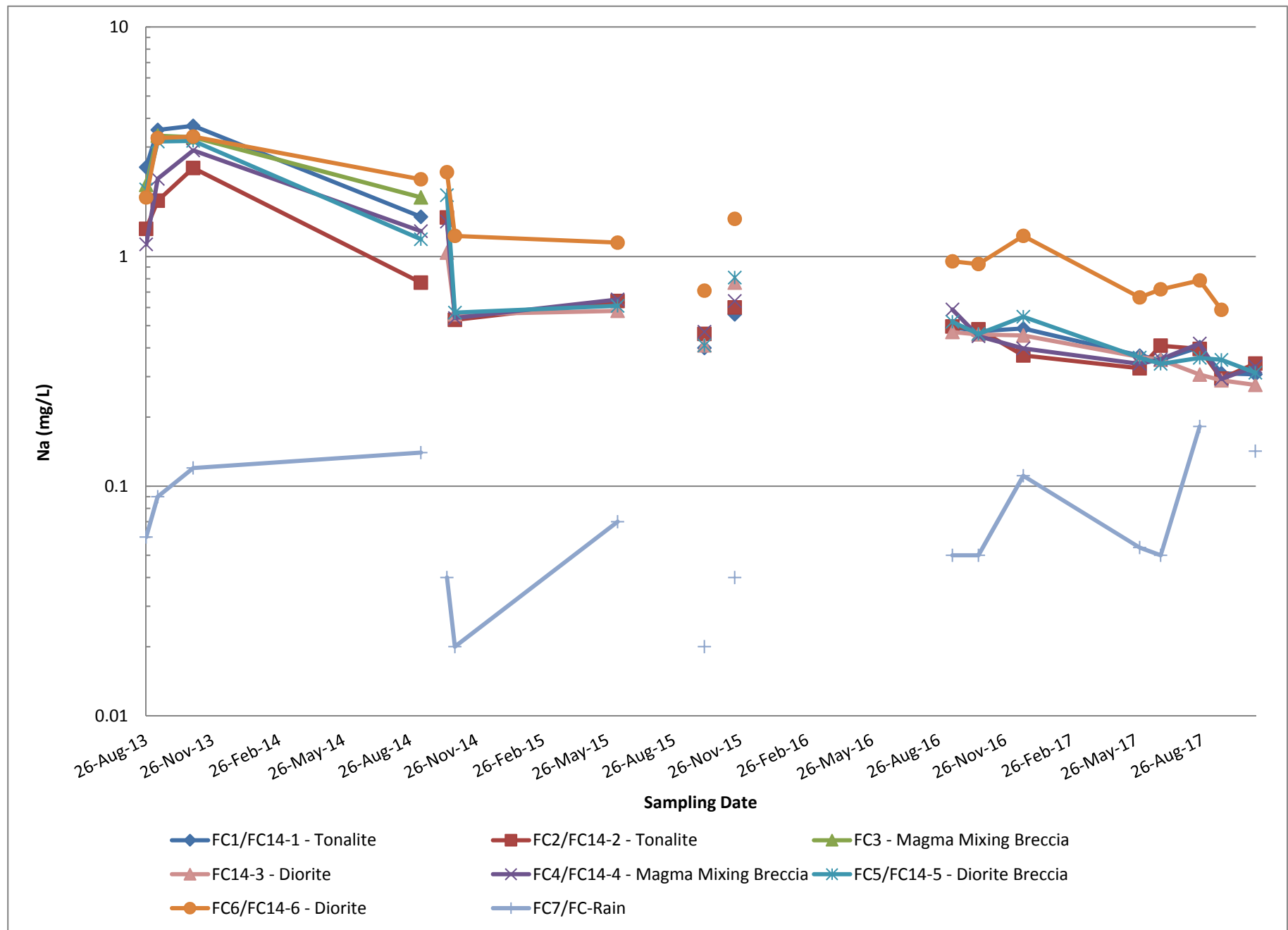


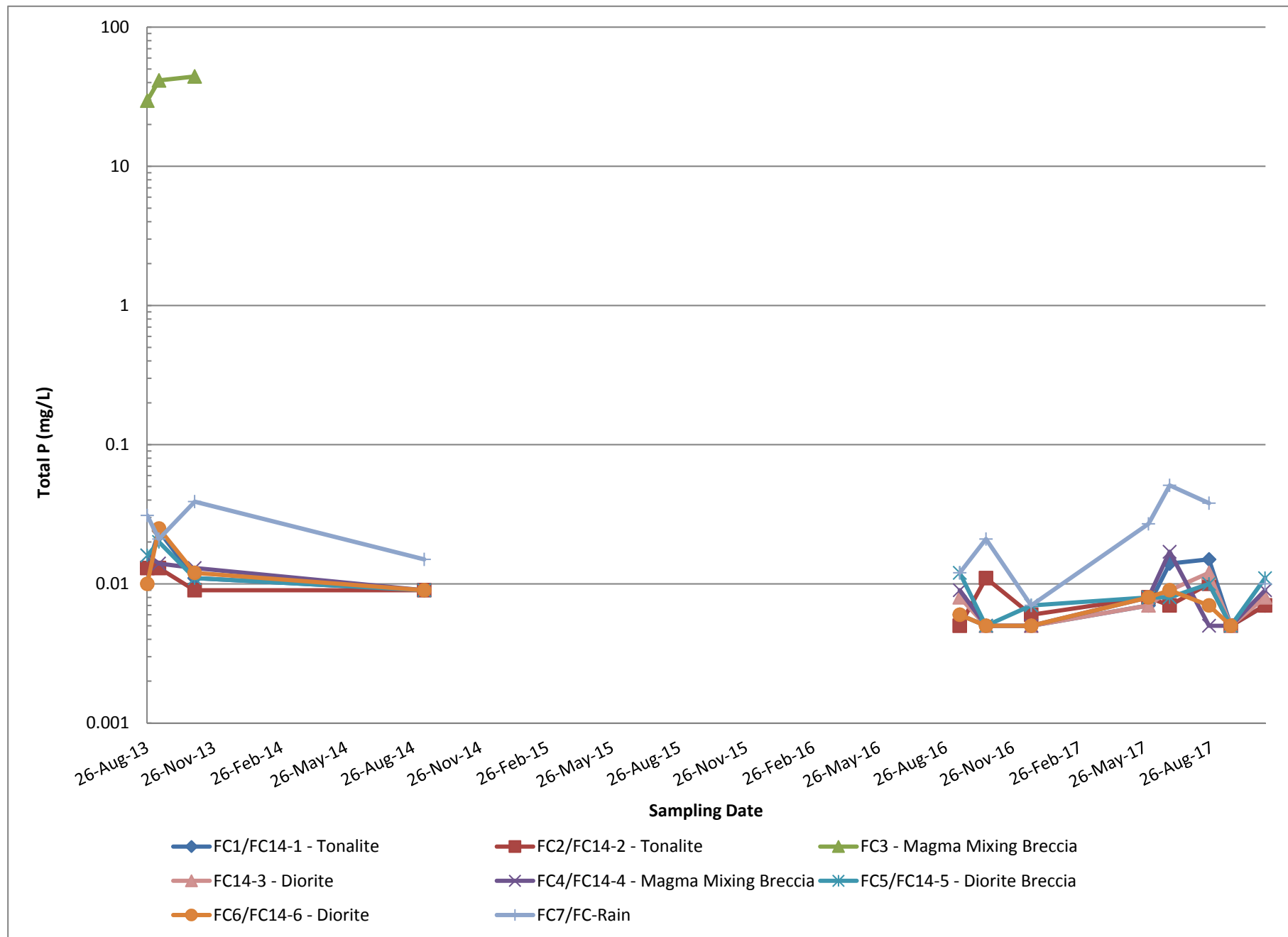


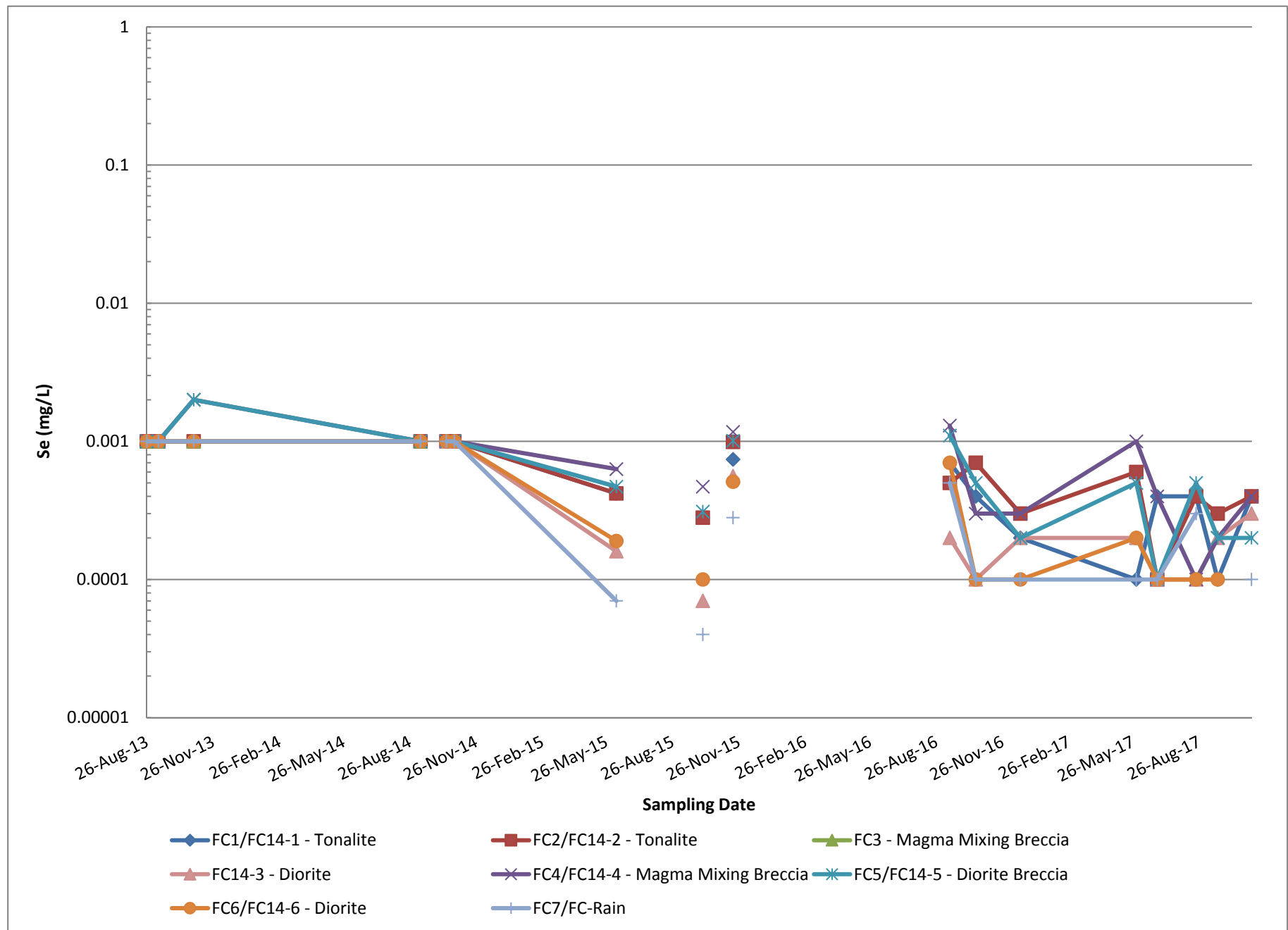


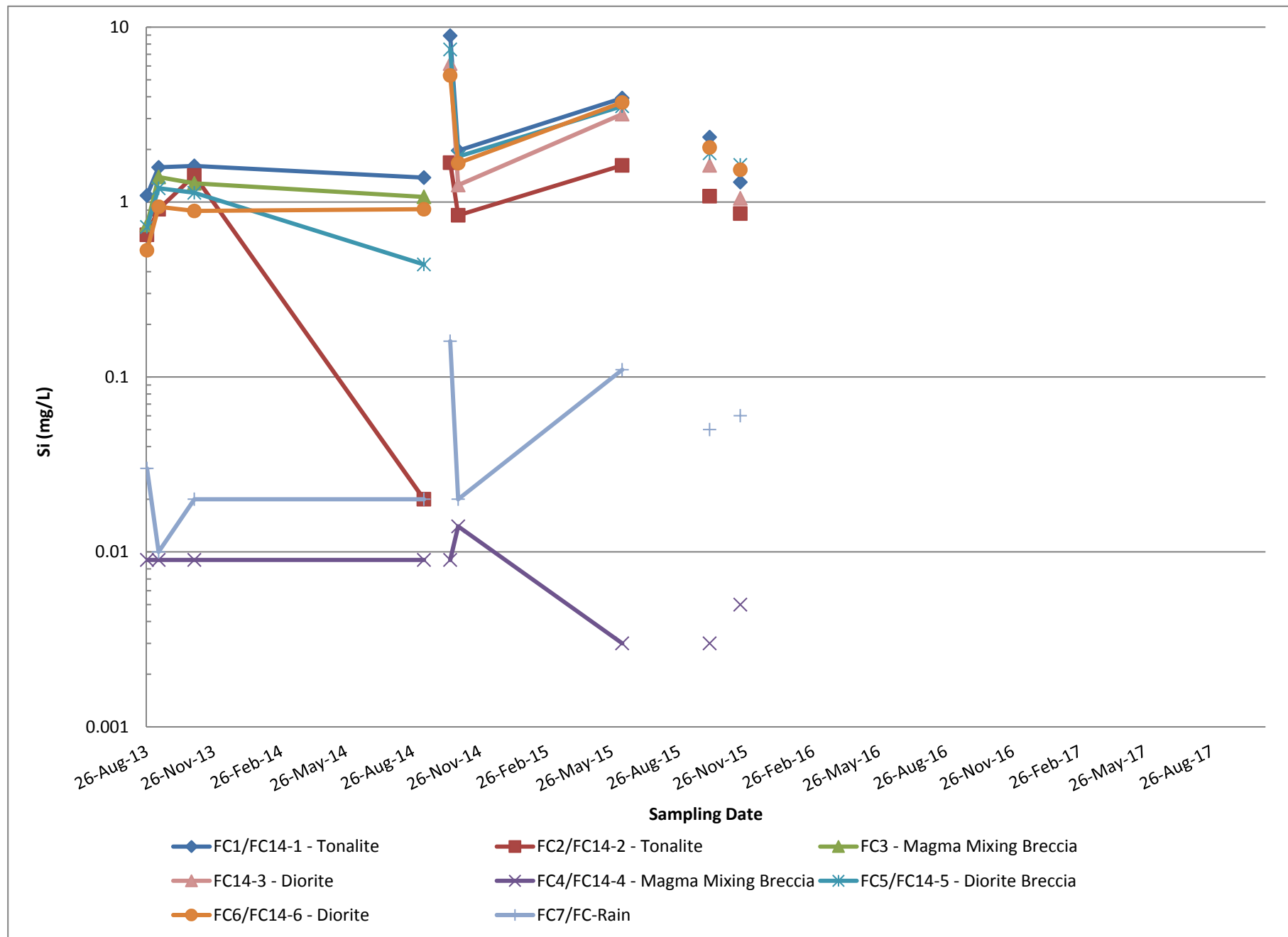


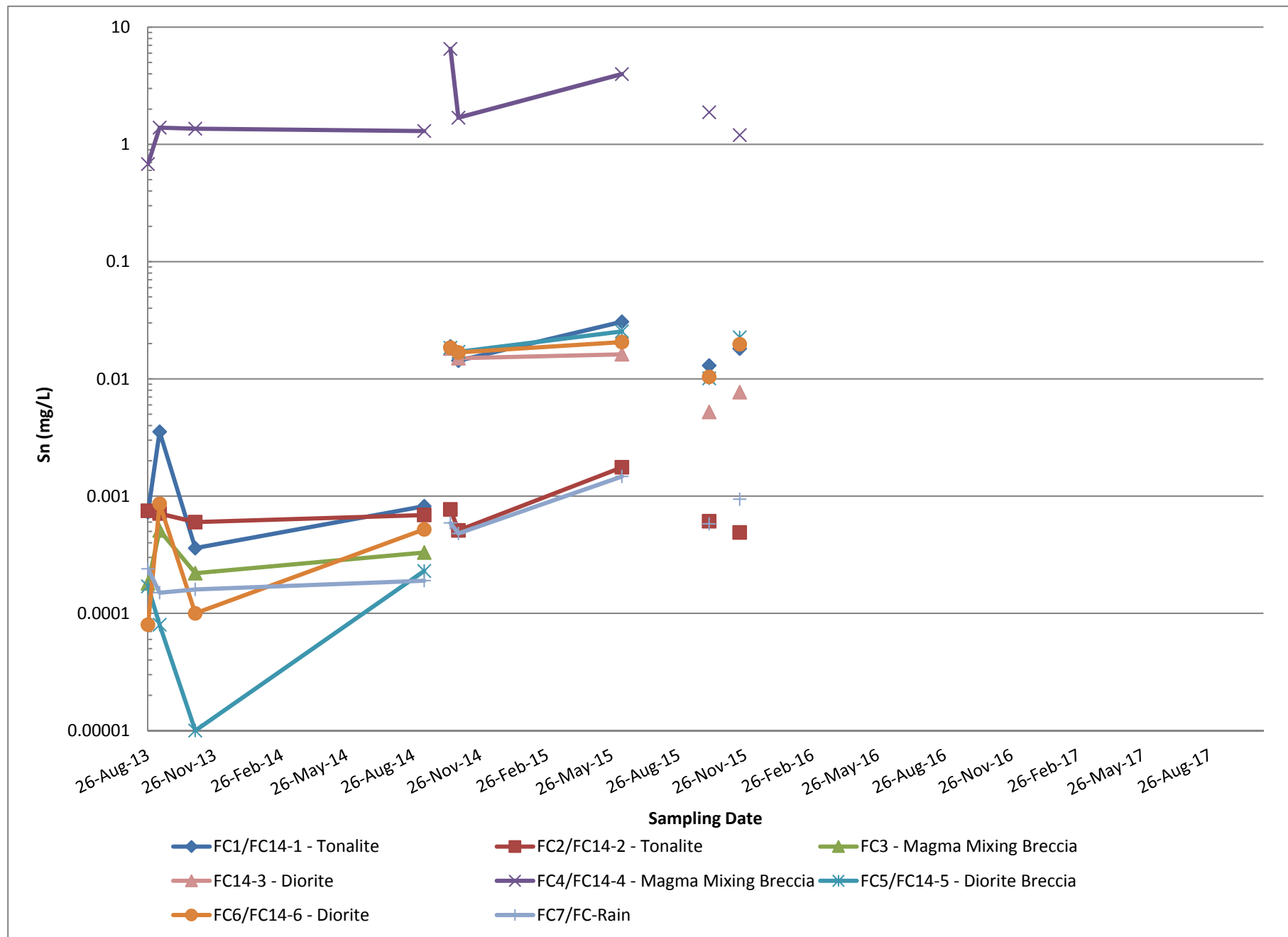


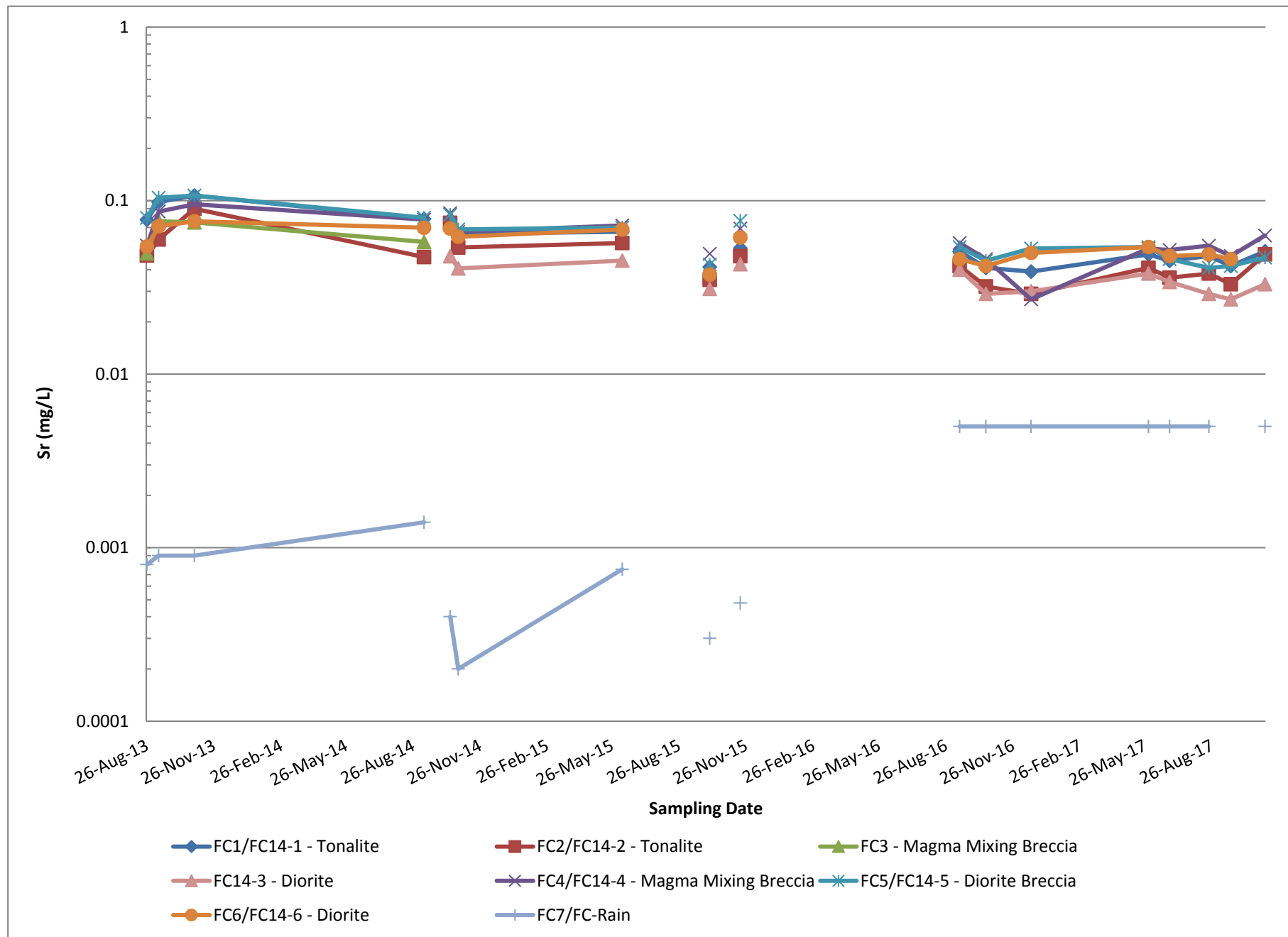


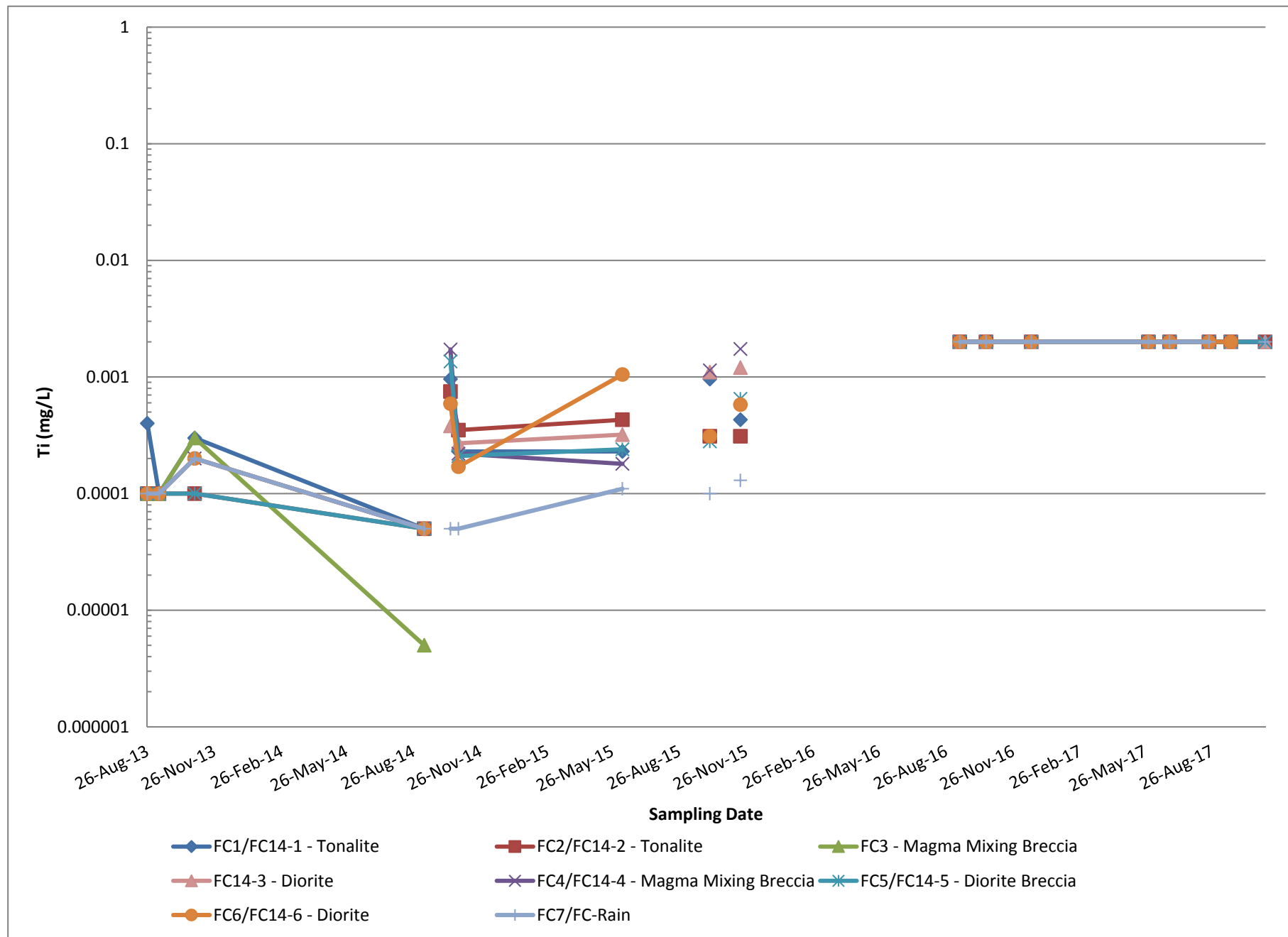


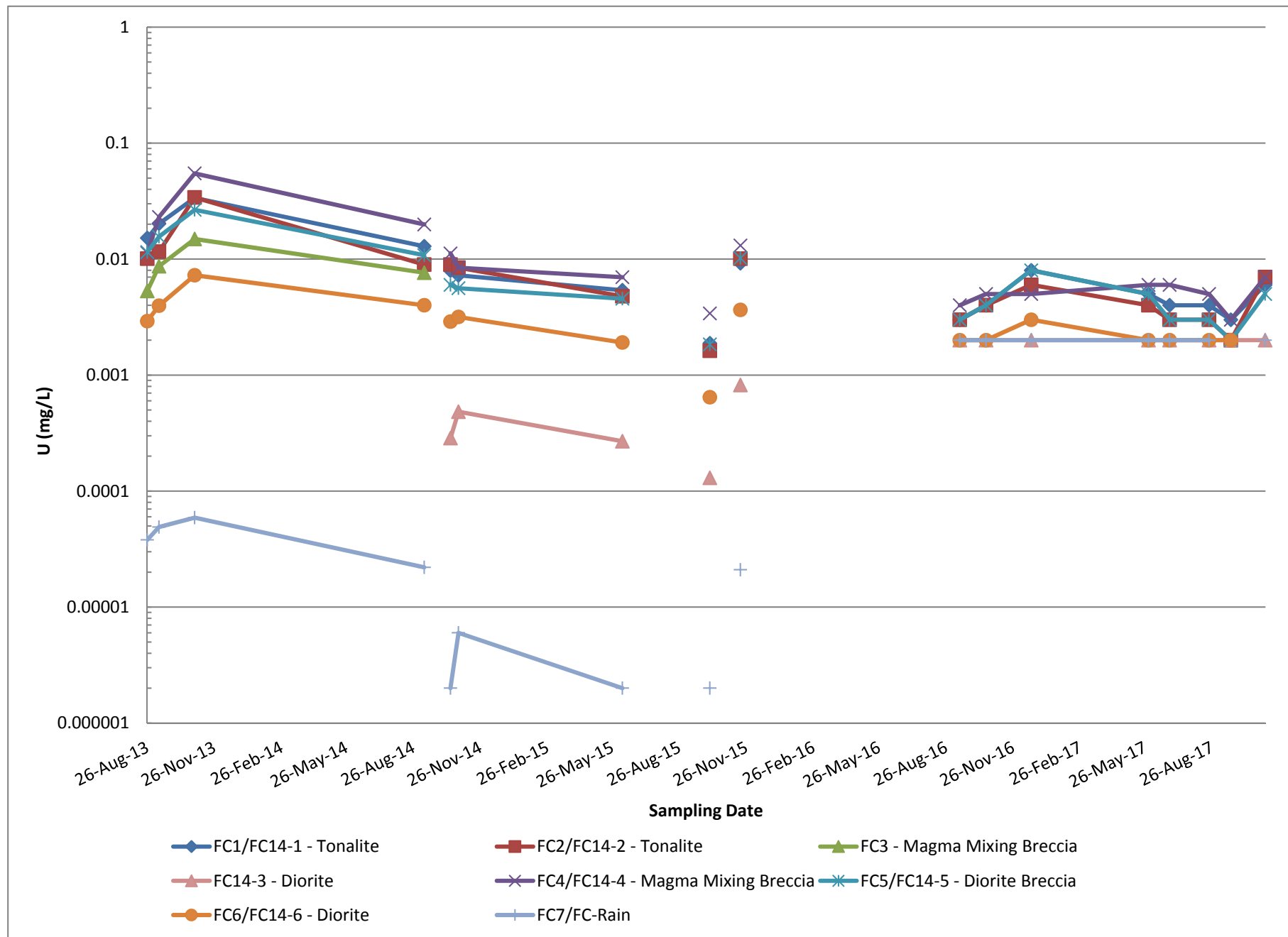


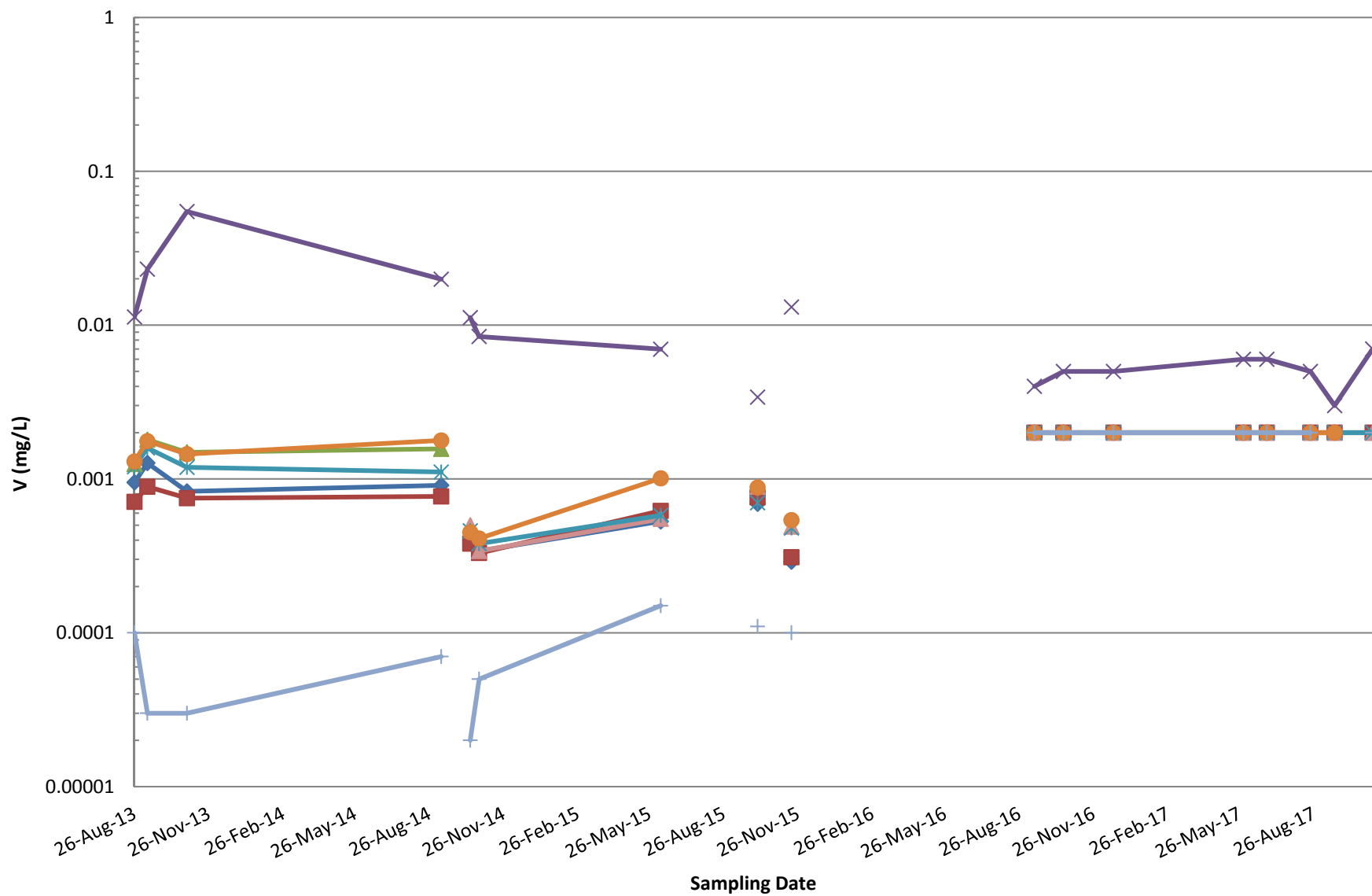












FC1/FC14-1 - Tonalite

FC2/FC14-2 - Tonalite

FC3 - Magma Mixing Breccia

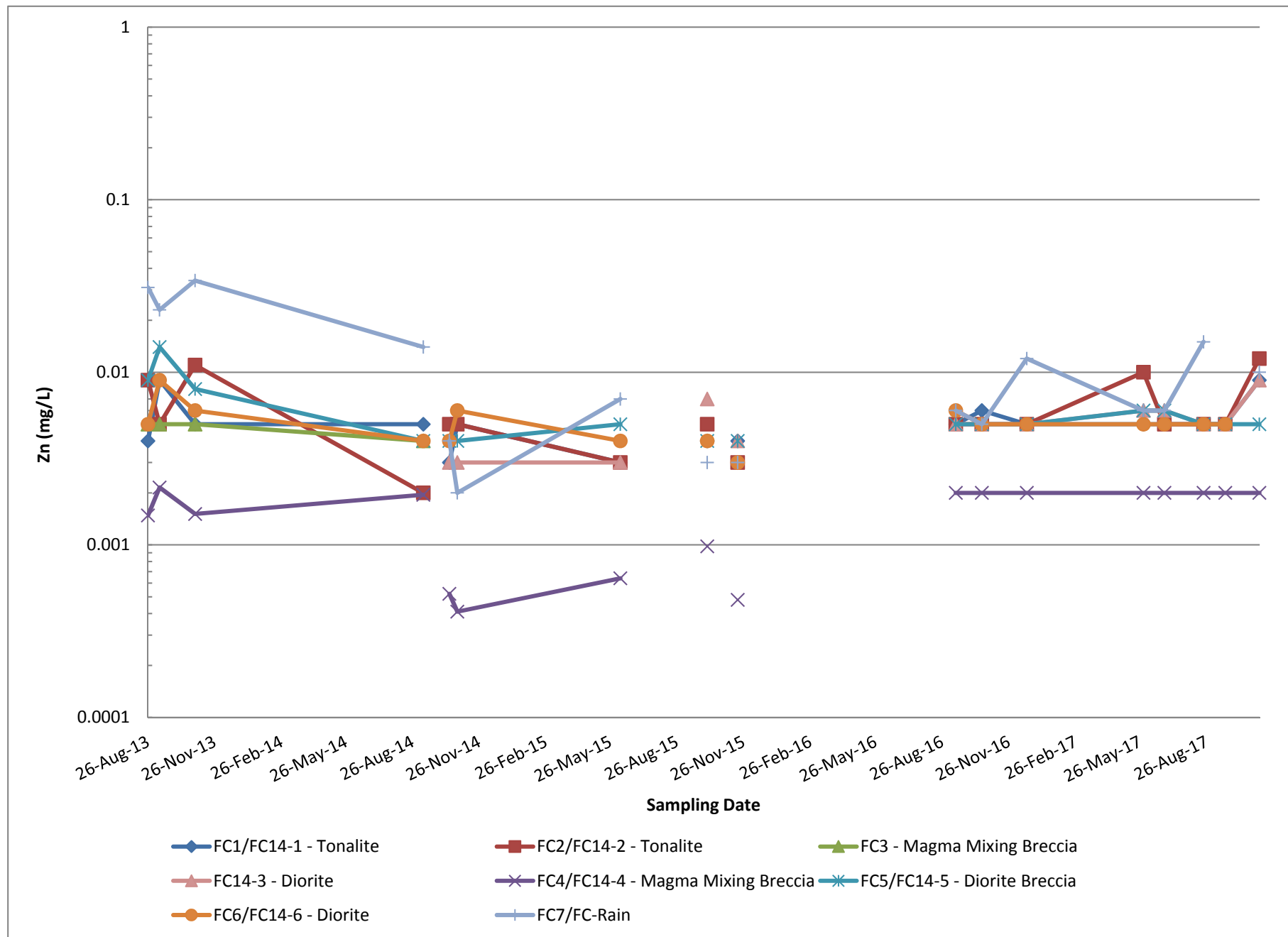
FC14-3 - Diorite

FC4/FC14-4 - Magma Mixing Breccia

FC5/FC14-5 - Diorite Breccia

FC6/FC14-6 - Diorite

FC7/FC-Rain



Appendix F Mine Rock Adaptive Management Proposal - Wood (Formerly Amec Foster Wheeler)

Memo

To: Dave Brown, Steve Woolfenden (IAMGOLD)

Date: September 21, 2018

From: Steve Walker (Wood)

cc: Don Carr, Steve Sibbick, Debbie Dyck (Wood)
Stephan Theben (SLR)

Ref: TC180501

Re: Mine Rock Adaptive Management Proposal – **DRAFT**,
Côté Gold Project, Ontario

1. INTRODUCTION AND BACKGROUND

Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood, formerly Amec Foster Wheeler), was retained by IAMGOLD Corporation (IAMGOLD) to conduct a geochemical characterization study of the future open pit mine rock in support of the Côté Gold Project Federal and Provincial Environmental Assessments (AMEC 2013, AMEC 2014).

The results of previous geochemical characterization studies for the Côté Gold Project open pit identified that most mine rock had a low sulphide content with a low potential for metal leaching / acid rock drainage and an overall excess of neutralization potential (NP) over acid potential (AP). The average neutralization potential to acid potential ratio was 19. More than 93% of samples were classified as non-potentially acid generating (NPAG) based on an NP to AP ratio >2.

In addition, distribution of potentially acid generating (PAG) rock based on an NP to AP ratio <2 appeared to be largely random and not localized within the future pit. PAG sample distributions were sparse, but some apparent visual clustering of data was observed in certain regions. The apparent visual clustering of PAG samples had no geological basis and the cluster volumes appeared to contain dispersed rather than continuous PAG rock with a clear overall excess of NP. Planning for segregation of PAG material based on such distributions was not considered to be feasible and/or beneficial from a mine waste management and mine water quality perspective.

In January 2017, the Provincial environmental assessment (EA) process for the Côté Gold Project was successfully concluded, subject to various terms and conditions listed in the EA approval. Condition 12.1, of the Provincial EA approval requires a mine rock adaptive management approach proposal, and is described below:

12.1 The Proponent shall submit to the Environmental Compliance Approval Director a waste rock adaptive management approach proposal, prepared to the Ministry's satisfaction, which outlines the Proponent's strategy for ensuring that waste material that is potentially acid generating (based on geochemical monitoring) will ultimately be randomly distributed in the waste rock area during Construction, operations and closure phases of the Undertaking. The Proponent shall submit its waste rock adaptive management approach proposal with its industrial sewage Environmental Compliance Approval application and in its Closure Plan submission to the Ministry of Northern Development and Mines.

This memo has been prepared to address Condition 12.1. This adaptive management proposal will be built in to the Côté Gold Project environmental management system. The initial characterization measures described herein will be executed and further adaptive management plans as described will be implemented as needed.

This adaptive management proposal includes the following:

1. Supplemental Côté Gold Project open pit PAG rock continuity assessment, and
2. Adaptive mine rock management approach.

2. SUPPLEMENTAL OPEN PIT PAG ROCK CONTINUITY ASSESSMENT

Existing information has identified that a low fraction of PAG rock is expected to be present within the Côté open pit with sufficient excess NP such that net acid generating conditions are unlikely for unsegregated Côté mine rock. In order to guide the level of additional mine rock management and monitoring that is appropriate for the project, Wood is recommending execution of a more detailed assessment of NP and AP distribution at the mine block scale. The program will include the following additional sampling and analysis.

- Select approximately 30 PAG rock target intervals for a more detailed spatial assessment of ARD risk at the mine block scale.
 - The target intervals will be distributed across the open pit in order to cover the range of mine rock lithologies
 - The current geological model, geochemistry results and drill-hole database will be utilized to select the intervals for assessment in consultation with IAMGOLD geologists where necessary.
- Assess the continuity of PAG rock materials along each target interval and also the net balance of NP and AP at the mine block (10m) scale rather than individual sample scale.
 - Assessment will include analysis of a continuous set of 1 to 2m rock core sample intervals approximately 10m above and 10m below the target sample (20 m interval in total) for Leco carbon and sulphur as a proxy for NP and AP as applied in previous studies.

- Analysis of approximately 20% of samples for i) full acid base accounting (ABA) including modified NP determination and carbon and sulphur speciation and ii) ICP metals including sulphur determination.
- Assessment of the results to determine the presence of any notable continuous PAG zones at the 10m scale.
- Determination of the net balance of NP and AP at the 10m scale in the segments analysed.

The results of this analysis are expected to confirm the discontinuous nature of PAG rock and the lack of net acid generating conditions within the future planned unsegregated waste rock stock pile. Results of this analysis will also be used to guide the level and approach for waste rock monitoring during operations as detailed in the following section.

3. ADAPTIVE MINE ROCK MANAGEMENT APPROACH

The results of the above described continuity assessment will be used to guide mine waste management in terms of monitoring and screening of mine rock during operations. Where the spatial PAG assessment described above identifies no concerns for net acidic drainage from an unsegregated mine rock stockpile, a verification sampling and monitoring program will be implemented as described in Section 3.1. Should the spatial PAG assessment identify any zones of concern for ARD that when placed within the planned unsegregated waste rock stock pile pose a risk of ARD, an updated waste rock management plan will be developed as described in Section 3.2 below.

3.1. Low Risk of ARD Confirmed by Spatial Assessment

Where no net acid generating zones are identified by the above spatial PAG assessment, a low risk of ARD should be considered confirmed and verification level ABA screening program will be implemented for open pit mine rock. This verification program would include the following approach.

- Periodic analysis of blast hole cuttings for Leco carbon and sulphur to determine analogue NP and AP. Initially, one random sample of blast hole cuttings for every 30,000 tonnes of mine rock for verification purposes. Sampling frequency is expected to decrease as monitoring progresses and geological experience is gained.
- Sample location and predominant lithology or lithologies for the sample to be recorded.
- One in 10 samples to be analysed for full ABA including modified NP determination, total carbon and total sulphur, HCl leachable sulphate sulphur and sulphide sulphur by difference (total sulphur less sulphate sulphur).
- Evaluate data as received. If PAG results are identified conduct a visual inspection of suspect lithology and region within the open pit and carry out additional sampling as appropriate. Evaluate need to adjust mine rock management plan.
- Evaluate data annually by a qualified professional. Recommendation to reduce or otherwise adjust sampling frequency may be made at that time, where appropriate.

3.2. Risk of ARD Identified by Spatial Assessment

Where potential for ARD is identified based on the above spatial PAG assessment, a revised mine rock management plan will be prepared. Additional investigation and consultation with IAMGOLD staff may be the appropriate first steps to guide the understanding of the specific rock volume(s) requiring management. The updated mine rock management plan will be scaled to the nature and volume of PAG material expected; however, based on overall characterization work to date, any such PAG volumes, should they be identified, are expected to be small.

An updated mine rock management plan could range from implementing geological controls to segregate localized volumes of previously unidentified PAG material to conducting systematic blast-hole sampling with on-site Leco carbon and sulphur analysis to identify segregable PAG volumes for management in previously unidentified zones of concern. An appropriate management/storage plan for any PAG rock volumes, if required, would also be developed. Such a plan may include proven strategies such as encapsulation (within mine rock stock pile or tailings), blending within the NPAG stockpile, relocation to the pit prior to flooding, or an alternate approach deemed suitable at that time. The updated plan will be added to the Côté Gold Project environmental management system and submitted to MNM for approval.

4. INTEGRATION WITH OTHER SITE MONITORING ACTIVITIES

Though not specifically integrated herein, it is assumed that regular water quality sampling of open pit and waste rock dump run-off will be completed as part of other operational site monitoring programs. If notable degradation in water quality is observed, investigation of mine rock as a potential source should be completed. Adjustment of mine rock management plans following an approach similar to that described in Section 3.2 above would be considered, if appropriate.

5. REFERENCES

- AMEC Environment and Infrastructure (AMEC). 2013. Côté Gold Project Geochemical Characterization Report.
- AMEC Environment and Infrastructure (AMEC). 2014. Addendum to Appendix E – Geochemical Characterization Report.

Appendix G Building List

Building List

Building Number	Building Name (Building Use)	Occupancy Classification	Construction Type	Building Size
415-BLD-100 (415-ER-0001)	Main Substation Switch E-house	Group F Div 3	Pre-fabricated steel modular	8m W x 25m L
508-BLD-100	Security Gatehouse and Control	Group F Div 3	Pre-fabricated steel modular	3.65m W x 18.29m L
515-BLD-100	Permanent Accommodations Camp Complex	Group C – Dormitories Group A Division 2 – Other Buildings	Modular Timber	145m W x 150m L Footprint
515-BLD-101	Construction Camp	Group C – Dormitories Group A Division 2 – Other Buildings	Skidded Modular Timber	160m W 160m L Footprint
515-BLD-102	Construction Camp at Chester Site	Group C – Dormitories Group A Division 2 – Other Buildings	Skidded Modular Timber	114m W x 120m L Footprint
516-BLD-100	Mine Dry Building	Group A Division 2	Modular Timber	18.29m W x 65.84m L
520-BLD-100	Administration Office Building	Group D	Modular Timber	18.29m W 73.2m L
530-BLD-100	Truck Shop Building	Group F Div 3	Pre-engineered steel structure with insulated sandwich metal wall and roof panels	41m W 80m L
530-BLD-101	Warehouse Facility	Group F Div 3	Pre-engineered steel and with insulated FR Fabric cover	25m W x50m L
530-BLD-102	Truck Wash Facility	Group F Div 3	Pre-engineered steel and with insulated FR Fabric cover	24m W x 37.8m L
530-BLD-103	Heated and Cold Storage Facility	Group F Div 3	Pre-engineered steel and with insulated FR Fabric cover	13.7m W x 48.8m L
530-BLD-104	Emergency Vehicles Storage and First Aid Facility	Group F Div 3	Pre-engineered steel and with insulated FR Fabric cover and Prefab Modular	15.2m W x 18.8m L
590-BLD-100	Assay Laboratory Building	Group F Div 2	Pre-fabricated timber modular with insulated metal cladding envelope	19.3m W x 21m L
604-BLD-100	Primary Crushing – Control Room	Group F Div 3	Pre-fabricated steel modular	5m W x 5m L
604-BLD-101 (604-ER-0001)	Primary Crushing – E-Room	Group F Div 3	Pre-fabricated steel modular	5m W x 15m L
604-BLD-102 (604-ER-0002)	Secondary Crushing – E-Room	Group F Div 3	Pre-fabricated steel modular	5m W x 30m L
604-BLD-103 (604-ER-0003)	Screening – E-Room	Group F Div 3	Pre-fabricated steel modular	5m W x 15m L
605-BLD-100	Coarse Ore Stockpile Enclosure	NFPA 101; Chapter 42	Pre-engineered steel dome structure Enclosure	92.2m Diameter
605-BLD-101 (605-ER-0001)	Reclaim – E-Room	Group F Div 3	Pre-fabricated steel modular	5m W x 10m L
610-BLD-100	Grinding Area Process Building	NFPA 101; Chapter 40	Pre-engineered steel with insulated sandwich wall & roof panels	38m W x 64m L
610-BLD-101 (610-ER-0001)	Grinding Area - E-Room	Group F Div 3	Pre-fabricated steel modular	10m W x 30m L
610-BLD-103	Grinding Area Offices, Lunchroom Washrooms	NFPA 101; Chapter 40	Pre-fabricated steel modular	10m W x 32m L
627-BLD-100	CIP Areas	NFPA 101; Chapter 40	Pre-engineered steel with insulated sandwich wall & roof panels	38m W x 64m L
632-BLD-101 (632-ER-0001)	Refining - E-Room	Group F Div 3	Pre-fabricated steel modular	10m W x 30m L
632-BLD-100	Electrowinning & Refining	NFPA 101; Chapter 40	Precast concrete panels on steel structure	19m W x 32m L
690-BLD-102	Metallurgical Laboratory	Group F Div 2	Pre-fabricated steel modular	8m W x 10m L