

# **TOBSWMF's Groundwater Monitoring Program December 2019**

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Laboratory data and summary report associated with the Town of Babylon Solid Waste Management facilities from September and December 2019 generated pursuant to the Town of Babylon Groundwater Monitoring Program.

# December 2019 TOBSWMF's Groundwater Monitoring Program Results

## Introduction

Groundwater sampling for the Groundwater Monitoring Program (GMP) at the Town of Babylon Solid Waste Management Facilities (TOBSWMF's) occurred in September 2019 (Cell 7 GMP) and December 2019. Laboratory analysis for the December 2019 traditional GMP (wells GM-2, 4, 5, 6, 7, 15, 16, 17, 18 and 19) was for routine parameters plus TAL metals, 1,4 dioxane and PFOA's. Laboratory analysis associated with the Cell 7 GMP (well clusters 26, 27 and 28) was scheduled for baseline parameters, 1,4 dioxane and PFOA's for September 2019 and routine parameters, 1,4 dioxane and PFAS/PFOA for December 2019. The 2018 Update Site Analytical Plan for the Town of Babylon Solid Waste Management Facilities (TOBDEC, 2018) provides an overview of the sampling procedures and protocols utilized with the GMP for the TOBSWMF's. Details on the Groundwater Monitoring Program for Cell 7 is described in an Addendum to the Groundwater Monitoring Program for Cell 7<sup>1</sup> prepared by P.W. Grosser Consulting. Laboratory analysis for the September and December 2019 GMP was performed by Pace Analytical Services Inc (Laboratory ID 10478). Pace Analytical subcontracted a portion of the analysis (PFAS/PFOA's) to Eurofins TestAmerica Inc.

The laboratory data package was prepared by Pace Analytical Services Inc with subcontract reports from Eurofins TestAmerica. The data package is comprised of the laboratory results, project narratives and laboratory QA/QC documentation prepared by Pace Analytical Services Inc and Eurofins TestAmerica. Any issues, deficiencies or flagging of results were summarized in these narratives and can be found in appendix 1 of this report. In addition to internal laboratory QA/QC a trip blank, equipment blank and field duplicate (GM-27I) were included as part of the September 2019 and December 2019 GMP. The field duplicates for September and December 2019 did not indicate any notable discrepancies in analytical results. Trip blanks were obtained in addition to internal laboratory QA/QC as part of the operational QA/QC requirements. The trip blank (sampled for volatiles) collected with the September 2019 GMP included low levels of acetone (.0057 mg/l) and methylene chloride (.0028 mg/l). For December 2019 a trip blank was collected (results provided with LMP, samples obtained with same sampling team and same day as GMP) and was clean. An equipment blank was also obtained in addition to internal laboratory QA/QC. The September 2019 equipment blank included a hit for phenolics (.0027 mg/l). The December 2019 equipment blank (provided with the LMP data) was clean. No additional QA/QC for the analysis for PFAS/PFOA's beyond that provided with the laboratory QA/QC program is required. Review of qualifiers in the

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<sup>1</sup> P.W. Grosser Consulting, "Addendum to Groundwater Monitoring Program for Lateral Expansion of the Southern Ashfill (SA EXP), Town of Babylon Landfill". August 2015.

September and December 2019 lab report provided by Eurofins TestAmerica noted certain PFAS compounds were found in the blank and sample at low values. These reports can be found in appendix 1.

Overall, each data package was certified by the laboratory as being in compliance with the laboratories quality assurance manual both technically and for completeness.

### **Monitoring Network**

The TOBSWMF's are located on Gleam Street in West Babylon, New York (Map 1). Map 2 illustrates the location of the ash facilities and monitoring well network utilized with the GMP.

Groundwater wells 2, 4, 5, 6, 7, 15, 16, 17, 18 and 19 were originally part of the monitoring network constructed for the Babylon RI/FS. This matrix of groundwater wells is comprised of two bands of sampling stations downgradient of the former Babylon Landfill and SA, ONU and NNU ash facilities, and one upgradient sampling point (GM-2). These monitoring wells comprise Babylon's traditional GMP that has been in place since 2001. These wells continue to be sampled semiannually and provide the necessary data to monitor both the long term progress of the remedial actions implemented at the former Babylon Landfill and the groundwater quality downgradient of the Southern and Northern U ashfills.

# Map 1

## Location of Babylon SWMF's



**Legend**

Babylon\_SWMF's

Source: TOBGIS

Town of Babylon Department of Environmental Control  
June 2012



Groundwater well clusters 26, 27 and 28 were constructed specifically to satisfy the groundwater monitoring requirements for Cell 7. Well cluster 26 provides upgradient data and well clusters 27 and 28 the downgradient data to monitor Cell 7. These wells are scheduled to be sampled quarterly for the Cell 7 GMP.

### **GMP for Landfill plume, Southern Ashfill and Northern U Ashfills**

The first section of this report focuses on the monitoring requirements associated with the former Babylon Landfill and the Southern and Northern U ashfills. The monitoring plan for these facilities incorporates the two northernmost bands of wells constructed for the former Babylon Landfill RI/FS. This network was designed to delineate the plume associated with the former Babylon Landfill and is now utilized to monitor the long term trend of the former landfill plume as required by the ROD, and to satisfy the permit/regulatory requirements for a groundwater monitoring component associated with operation of the Southern and Northern U Ashfills. This segment of the Babylon GMP has been ongoing since 2001 and is referred to in this report as the traditional GMP. The lab report for this round of sampling has been attached as appendix 1. Sampling procedures are provided within the Site Analytical Plan for the Town of Babylon Solid Waste Management Facilities' (SAP) (TOBDEC, 2018).

### **Data: Groundwater Monitoring for Traditional GMP**

The following spreadsheets provide a tabular comparison of the December 2019 results and historical dataset at wells 2, 4, 5, 6, 7, 15, 16, 17, 18, and 19. From the June 2019 data:

- The December 2019 laboratory results largely conform to historical datasets with the following notations:
  - Indicators from monitoring points GM-6 and 7 remain variable during sampling for the GMP.
    - Leachate indicators (chloride, alkalinity and calcium) for June and December 2019 at GM-6 were notably reduced from recent values.
    - Chloride at GM-7 is erratic but has been observed at background 5 of the past 6 samples. Chloride at GM-5 has been observed at elevated values since December 2015 (except June 2017). Chloride was elevated at GM4 for June 2019 and returned to its historical range for December 2019.
    - Calcium remains elevated at GM- 7.
    - TKN had been elevated at GM-6 (December 2016-August 2018) and has been observed within its historical range for June and December 2019.
  - A number of indicators for traditional GMP were observed at or near background for December 2019.
    - Chloride at well GM-7 was at background and slightly above background at GM-16. As noted above, chloride at GM-7 has been observed at background in five of the past 6 sampling events.
    - Calcium at wells GM-4, 5, 16, 17 and 19 were at background.

- TKN was observed at background at wells GM-4, 5, 7, 16, 17, 18 and 19. TKN at GM-6 and GM-15 remain the only wells within this network with measurable values for TKN. TKN at GM's 6 and 15 remain variable and are within their historical range.
  - TDS at wells GM-4, 16 and 17 were observed at background. TDS at GM-15 (6 mg/l) for June 2019 was well below its historical range and was deemed questionable in the June 2019 GMP report. TDS at GM-15 (584 mg/l) returned to its historical range in December 2019.
  - Alkalinity at monitoring points GM-4, 5, 16, 17 and 19 were observed at or near background.
- TOBDEC contacted the laboratory and sampling team after observing questionable specific conductance values provided with the December 2018 and June 2019 specific conductance field data (appendix 1). The sampler responded that problems were noted with the instrument in June 2019 and the probe was switched out. They indicated the probe failed again in September 2019 and a new conductivity meter was purchased. It is noted that the specific conductance data for December 2019 appears to better coincide with historical data. Based upon this observation and response, the December 2018 and June 2019 specific conductance data should be viewed as suspicious.
- Piper diagrams have been updated at GM-4, 5, 6, 7, 15, 16, 17, 18 and 19 (figures 6-14). No change from the prior analysis performed for the June 2019 GMP report was observed.
  - The Piper diagram depicted in figure 8 continues to illustrate that the data accrued for GM-6 coincides with the historical data from this monitoring point. The Piper diagram for groundwater at GM-6 does not share the geochemical fingerprint as established by leachate at the Town of Babylon ashfills.
  - The Piper diagrams for GM's 4 and 5 display random values where the lower right segment of the Piper diagram illustrate a greater concentration of chloride migrating to the area of the diagram occupied by leachate and the final data points falling within the area designated as groundwater and leachate mix on the Grosser diagram (figure 1). At GM-4 elevated values of chloride from May 2008, June and December 2009 and June 2019 coincide with the above discussed migration of data points in the corresponding Piper diagram. At GM-5 the shift in the lower left quadrant from December 2015-2019 (also noted June 2012, not noted or return to historical value June 2017) coincides with elevated values of sodium, and the shift in the lower right portion of the diagram from during that time period coincides with elevated values of chloride.
  - The Piper diagram for GM-7 provides a much less decipherable pattern, however the data points for December 2015 and December 2017 are notable whereby those data points are isolated, migrating

toward the groundwater leachate mix area of the diagram. Elevated chloride values are noted during these sampling events.

- The Piper diagrams for the second row of monitoring points did not include any notable observations for December 2019. These diagrams at times include random shifts to their fingerprints. These shifts were noted on December 2013, 2015 and 2016 at GM-15, June 2016 and 2017 at GM-16 (elevated sodium and reduced value of calcium) and December 2018 and June 2019 at GM-19 (elevated chloride).
- Overall, the concentration of leachate indicators at GM's-4, 16, 17 and 19 continue to be reduced from pre-remedial values and are consistently observed at or near background values (note, location GM-19 observed elevated values for chloride for December 2018 and June 2019 then was observed slightly above background for December 2019). Indicators at GM-6 had been exceeding their historical range since 2015 until June 2019, however it is noted that the Piper diagram for GM-6 has not shifted nor does the diagram share the geochemical fingerprint established for leachate (figure 1). Indicators at GM-5 are at or near background except for chloride and TDS which have recently been observed above their historical range. Indicators at GM's 7 and 15 have been erratic displaying random elevated and background values.

Leakage rate values (appendix 2) from the SA, Cell 7 and ONU (west) are generally within their historical range. Leakage rates at the ONU east have increased since 2016 from the average values observed from 2005-2015. Leakage rates at the ONU east were notably elevated from January-March 2019 and then returned to prior levels. This is likely the result of elevated rainfall from November 2018 to May 2019. Leakage rates at the NNU facility have been consistently monitored. Since 2017 the leakage rate has been observed to exceed the prior average leakage rate by approximately 2 orders of magnitude. It was noted for 2019 leakage rates at the NNU were further elevated January-June and then returned to the reduced range July-December 2019 (not to pre 2017 values). As noted above this is likely due to elevated rainfall values from November 2018 to May 2019 (appendix 2). The cause of the post 2017 leakage rate increase was previously believed to be a check valve malfunction/failure that allowed leachate being pumped from the NNU pump station to backflow into the secondary liner of the NNU facility. This repair was made and ALR values have not decreased. Solutions may entail an interim or permanent cap at the NNU facility<sup>2</sup>. The leakage rates from Cell 7 have been observed at + /- ~0.2 – 4 g/a/d<sup>3</sup>.

December 2019 sampling for the traditional GMP included 1,4 dioxane and PFAS/PFOA's. The results for 1,4 dioxane (appendix 1) and PFAS/PFOA's for GM's-2,4,5,6,7,15,16,17,18 and 19 are attached to this section of the report.

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<sup>2</sup> Conversation with Tom Vetri, Deputy Commissioner TOBDEC, December 2019.

<sup>3</sup> Excludes data from April 2014 impacted by a broken valve.

**GM-2**

Analyte	Units	Jan-91	Apr-91	Dec-01	Jan-03	2003	Aug Mar '04	Sept '04	Mar '05	Sept '05	APR' 06	Oct-06	May_07	Oct_07	May_08	Oct_08	June_09	Dec_09	Jun_10	Dec_10	Jun_11	
Chloride	mg/l	15	17	NS	25	18	20	13	16	16	16.5	17.50	18	14	18.5	16	16	17.0	18	17	23	
TKN	mg/l	1	0.6	NS	5.8	<.35	<.5	.249J	0.936	<.5	<.5	<.5	<.5	.162J	<.4	<.4	<.4	0.400	0.4	4	0.2	
Alkalinity	mg/l	18	12	NS	2	50	8.08	12.1	10.1	11.1	38.4	24.20	14.1	28.3	14.6	17.2	13.1	14.1	46	20	24	
TDS	mg/l	91	110	NS	114	188	140	110	100	140	150	106.00	86	140	112	150	143	119	180	170	200	
Spec. Cond.	umhos	140	141	NS	90	135	106	140	160	184	300	195.00	158	181	165	260	130		140	140	190	
pH									5.8	5.7	7.8	5.90	6.5	5.8	6	7.5	7.5	7.09	6.96	5.45	5.7	
Hardness	ppm	44	60	NS	50.1	56	53	56.8	54.7	57.9	65.3		56.3	57.3	54.5	69.6	54.1	52.6	76	54	56	
Aluminum	ppm	.069 B	<.1	NS	<.013	0.11	0.0427	0.065	0.0263	0.0423	0.164	0.60	0.0278	0.209	0.172	0.059	0.0928	0.230	3.9	0.08	0.2	
Mercury	ppm	0.0003	<.0002	NS	<.00002	<.00002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002		<.0002	0.000838	0.000200	<.00025	<.00025	<.0003	
Antimony	ppm	<.0006	<.04	NS	<.0065	<.002	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	0.0250	<.005	<.025	<.025	
Arsenic	ppm	<.0022	<.0022	NS	<.0097	<.0034	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	0.0250	<.005	<.025	<.025	
Barium	ppm	.083 B	.09 B	NS	<.0006	0.0053	0.011J	.016J	.013J	<.02	.0123J	0.03	0.0152	0.201	0.0206	0.0343	0.033	0.0420	0.019	<.025	<.025	
Beryllium	ppm	<.001	<.001	NS	<.0002	0.0003	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.0200	<.001	<.0005	<.005	
Boron																						
Cadmium	ppm	0.0056	<.005	NS	<.0007	<.0003	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.0100	<.005	<.025	<.025	
Calcium	ppm	14.2	15.7	NS	<26	14	12.6	14.1	13.9	14.3	19.3	13.20	14.1	14.3	13.8	20	13.5	13.2	24	14	14	
Chromium	ppm	<.006	<.006	NS	<.001	<.0016	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	.0129J	0.0200	<.005	<.025	<.025	
Cobalt	ppm	<.006	<.006	NS	<.0006	0.0006	<.02	<.02	<.02	<.02	<.02	0.10	<.02	<.02	<.02	<.02	<.02	0.0200	<.005	<.025	<.025	
Copper	ppm	<.002	<.003	NS	<.0031	<.0029	<.02	<.02	<.02	<.02	<.02	.00617J	<.02	<.02	0.00383	.0056J	.0069J	0.0558	<.01	<.05	<.05	
Iron	ppm	.046 B	<.06	NS	<.012	1.17	0.966	1.05	1.05	1	1.11	1.72	0.934	0.911	0.981	0.855	1.07	1.37	15	0.84	1.1	
Lead	ppm	<.0023	<.0022	NS	<.0024	0.0032	<.015	<.015	<.015	<.015	<.015	0.07	<.015	<.015	<.015	<.015	<.015	0.00359	<.005	<.025	<.025	
Magnesium	ppm	3.13 B	3.52 B	NS	<.0055	5.11	5.28	5.25	4.84	5.37	4.14	3.93	5.11	5.26	4.85	4.81	4.97	4.78	4.3	4.4	5.2	
Manganese	ppm	0.021	0.0206	NS	<.0006	0.07	0.073	0.067	0.0679	0.0712	0.0681	0.06	0.0678	0.685	0.0646	0.0711	0.0707	0.0692	0.07	0.07	0.07	
Nickel	ppm	<.013	<.009	NS	<.0017	0.0014	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.0153	<.01	<.05	<.05
Potassium	ppb	6.97	4.290 B	NS	<28	1.08	1	1.19	0.942	0.947	2.35	3.12	1.34	1.26	1.47	4.11	0.983	0.932	2.6	2.7	<5	
Selenium	ppm	.0018 B	<.0022	NS	<.0034	<.0043	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	0.0250	<.01	<.05	<.05	
Silver	ppm	<.003	<.003	NS	<.0003	<.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.0200	<.005	<.025	<.025	
Sodium	ppb	9.79	9.86	NS	<12	8.67	9.73	10.2	8.84	8.67	12.2	14.30	10.6	3.38	5.07	7.13	5.65	7.56	12	11	11	
Thalium	ppm	<.0022	<.0033	NS	<.0044	0.013	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	0.015	0.0150	<.005	<.025	<.025	
Vanadium	ppm	<.004	<.005	NS	<.0004	<.0005	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.0200	<.005	<.025	<.025	
Zinc	ppm	.012 BJ	.0086 B	NS	<.0058	0.0093	0.01	.009J	.0068J	<.02	.0085J	0.17	0.0149	0.0235	0.028	0.03	0.0228	0.0815	0.04	<.05	<.05	
Bromide	mg/l			NS	<.5	<1	0.67	<.1	<.1	0.13	.069J	0.26	0.124	<.1	<.5	<2	<2	2.00	<.5	1.5	<.5	
Ammonia	ppm	<.05	<.05	NS	1.74	<.11	<.05	<.05	0.0512	0.0604	<.05	<.05	0.293	<.05	<.05	<.05	<.05	0.0500	<.2	<.2	<.2	
BOD	ppm	<3	<3	NS	<2.41	11.7	<2.41	5.52	2.44	<2.41	14.1	<2	18.7	54.5	<2.41	<2	<2	2.0	<3	<2	<2	
COD	ppm	<40	<40	NS	<4.8	6.22	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<2	10.0	<40	<40	<40	
Nitrate	ppm	2.4	4.4	NS	0.034	0.043	<.1	<.1	<.1	0.199	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.100	<.5	<.5	<.5	
Phenols	ppm	<.001	<.001	NS	0.06	0.013	0.344	<.001	0.0058	<.01	<.01	0.03	0.0357	<.01	<.01	0.011	<.01	0.0163	<.001	<.001	<.001	



Analyte	Units	Jan-91	Apr-91	Dec-01	Jan-03	2003 Aug	Mar '04	Sept '04	Mar '05	Sept '05	APR' 06	Oct-06	May_07	Oct_07	May_08	Oct_08	June_09	Dec_09	Jun_10	Dec_10	Jun_11
Sulfate	ppm			NS	44.2	58.6	53.4	43.7	45.2	50.1	40.2	32.10	38.1	24.2	34.8	35.4	44.4	41.3	18	40	39
TDS	mg/l	91	110	NS	114	188	140	110	100	140	150	106.00	86	140	112	150	143	119	180	170	200
TOC	ppm			NS	3.81	13.2	1.29	<1	<1	<1	<1	2.10	<1	1.2	<.5	<1	<.5	0.5	4.7	3.7	0.8
DO																					
Turbidity																					
1,4 dioxane	ug/l																				
perfluorobutanoic acid PFBA	ng/l																				
perfluoropentanoic acid PFPeA	ng/l																				
perfluorohexanoic acid PFHxA	ng/l																				
perfluoroheptanoic acid PFHpA	ng/l																				
perfluorooctanoic acid PFOA	ng/l																				
perfluorononanoic acid PFNA	ng/l																				
perfluorodecanoic acid PFDA	ng/l																				
perfluoroundecanoic acid PFUnA	ng/l																				
perfluorododecanoic acid PFDoA	ng/l																				
perfluorotridecanoic acid PFTriA	ng/l																				
perfluorotetradecanoic acid PFTeA	ng/l																				
perfluorobutanesulfonic acid PFBS	ng/l																				
Perfluorohexanesulfonic acid PFHxS	ng/l																				
perfluoroheptanesulfonic acid PFHpS	ng/l																				
perfluorooctanesulfonic acid PFOS	ng/l																				
perfluorodecanesulfonic acid PFDS	ng/l																				
perfluorooctane Sulfonamide FOSA	ng/l																				
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ng/l																				
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ng/l																				
6:2 FTS	ng/l																				
8:2 FTS	ng/l																				
total PFOA/PFAS																					

Source of 1991 data: Geraghty & Miller, Inc., 1992, Babylon Landfill RI/FS, Task 2E, Groundwater Sampling.  
B- Concentration is greater than the instrument detection limit but less than contract required detection limit.  
J- Estimated value.  
NS- Not sampled.

Analyte	DEC_11	Jun_12	Dec_12	June_13	Dec_13	June_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18	June_19	Dec_19
Chloride	20	18	17.8	17.8	17.4	17.5	18.1	16.1	17.4	16	15.3	14.5	16.1	16.3	22	16.4	19.1
TKN	0.2	0.6	0.16	0.22	0.24	0.11	<.1	0.34		0.4	<.1	0.14	<.1	0.23	0.21	0.34	0.18
Alkalinity	18	22	9.25	8.85	9.3	9.3	9.45	8.6		15.1	13.8	12.2	14.2	12	10.7	24.2	9.3
TDS	72	160	115	141	91	98	104	105		133	111	108	121	123	107	129	132
Spec. Cond.	200	220	347	184	139	152	170	139	199	169	193	188	184	237	3470	3290	199
pH	6.87	5.33	5.32	5.48	4.86	5.62	5.67	4.5	5.4	6.04	7.59	5.08	6.23	6.35	6.28	7.45	6.22
Hardness	56	57	58	59	52	60	80	56	60	57	60	74	56	52	46	60	60
Aluminum	0.23		0.278	0.133	0.226	0.0325	<.2	0.127	0.277	1.23				0.23	.0909 J	0.236	0.193
Mercury	<.0002		.0002 U	<.0001	<.0001	<.0001	<.0002	<.0001	<.0001	<.0002				<.0002	<.0002	<.0002	<.0002
Antimony	<.0005		.060 U	.0033B	0.0037 B	<.0016	<.060	.0045 B	<.0006	0.0039				<.060	<.06	<.060	<.060
Arsenic	<.0005		.010 U	<.0028	.0012 B	<.0015	<.010	<.0013	<.0022	<.01				<.010	<.01	<.010	<.010
Barium	0.007		.200 U	.0049B	.0066 B	.0055 B	<.2	.0056 B	.0056 B	<.2				.0061J	.0057 J	<.200	.0059J
Beryllium	<.0001		.005 U	<.0001	<.00014	<.000091	<.005	<.00015	<.0002	<.005				<.005	<.005	<.005	<.005
Boron			.100 U														
Cadmium	<.0005	<.025	.005 U	<.0001	.0003 B	<.00014	<.005	<.00016	<.0001	<.0025	<.0025	<.00025	<.0025	<.0025	.000072 J	<.0025	<.0025
Calcium	15	14	14.8	14.3	15	14.4	14	14.6	14.7	16.4	15.6	14.8	14.2	15.4	14.5	20.8	13.6
Chromium	<.0005		.010 U	.0028B	.0038 B	<.00046	<.01	.0034 B	.003 B	0.0036				<.010	<.01	<.010	<.010
Cobalt	<.0005		.050 U	<.0004	.0005 B	.0003 B	<.050	<.00025	0.0003 B	<.05				<.050	<.05	<.050	<.050
Copper	<.01		.025 U	<.0004	.0101 B	.0015 B	<.025	.00070 B	.0024 B	0.0113				<.025	<.025	<.025	<.025
Iron	1	0.93	1.29	1.04	1.3	0.844	0.906	0.816	1.53	3.48	1.41	0.991	0.906	0.947	1.07	1.02	0.746
Lead	<.0005	<.025	0.0054	0.0095	0.0111	0.0134	<.005	0.0094	.002 B	0.0032	<.005	<.005	<.005	<.005	.003 J	<.005	<.0050
Magnesium	4.8	5.2	5.27	5.29	5.3	5.24	5.03	4.800 B	5.07	4.57	5.37	5.19	5.12	5.02	4.81	4.75	4.28
Manganese	0.07	0.07	0.0697	0.0703	0.0726	0.0735	.067.9	0.0691	0.0734	0.0791	0.712	0.0732	0.0647	0.0709	0.071	0.0717	0.0683
Nickel	<.01		.040 U	.0015B	.0006 B	.0008 B	<.040	.0021 B	.0011 B	<.04				<.040	<.04	<.040	.0084J
Potassium	1.6	<.5	5.000 U	2.82B	2.35 B	1.13 B	<.5.000	2.430 B	<.210	1.32	<.5	<.5.000	1.16	1.560J	3.62	<.5.000	14.8
Selenium	<.01		.005 U	.003B	<.0011	<.0014	<.01	<.0027	<.0022	<.01				<.010	<.01	<.010	<.010
Silver	<.0005		.010 U	<.0002	<.00043	<.00037	<.01	<.00087	<.0005	<.01				<.010	<.01	<.010	<.010
Sodium	11	9.8	10.1	9.76	10.3	10.1	11	10.8	12.4	12.4	12.1	11.3	11.3	12	12	11.6	16.7
Thalium	<.0005		.010 U	<.0019	.0014 B	<.0035	<.01	<.001	<.0019	<.01				<.010	<.01	<.010	<.010
Vanadium	<.0005		.050 U	.0003B	<.00039	<.00022	<.05	<.00036	<.0028	<.05				<.050	<.05	<.050	<.050
Zinc	0.01		.020 U	.0185B	0.0309	.0044 B	<.02	.0143 B	.0038 B	0.0287				.0091J	.0056 J	<.020	<.020
Bromide	<.5	<.5	.5 U	<.5	<.5	<.0005	<.0005	<.5	<.5	<.5	<.5	<.50	0.052	<.5	<.5	0.12	0.043
Ammonia	<.2	<.2	.1 U	<.1	<.1	<.1	<.1	0.32	<.1	<.1	<.1	<.10	0.072	.02J	<.1	0.093	0.041
BOD	<.2		2.0 U	<.2	<.2	<.002	<.002	<.2	<.2	<.2	<.2	<.4.0 D	1	<.2	<.4	1.4	1
COD	50	90	2.0 U	<.10	<.10	<.01	<.01	<.10	<.10		10.9	<.10.0	<.10	11.4	14.1	<.10	10.2
Nitrate	<.5	<.5	.1 U	<.1	<.1	<.1	<.1	<.1	<.1	0.13	0.079	<.050	<.05	<.05	<.05	0.049	0.016
Phenols	<.001	<.001	.005 U	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	.0033J	<.005	<.01	<.005

Analyte	DEC_11	Jun_12	Dec_12	June_13	Dec_13	June_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18	June_19	Dec_19	
Sulfate		44	41	49.2	49.1	49.1	49.7	48	48.5	49.4	49.7	48.7	48.2	49.2	49.5	69.6	44.4	49.5
TDS		72	160	115	141	91	98	104	105	113	133		108	121	123	107	129	132
TOC	<.5	<.5	1.0 U	<1		3.4 <.001		3.4 <1	<.5		4.18 <1	<1.0		1.2	1.3	1.9	0.98	0.83
DO		0.5	1.1	0.59	1.49	0.48	0.79	1.06	3.27	3.55	3.15		4.28	1.02	3.73	0.17	2.55	2.15
Turbidity		4.9	16	1.0 U	1.8 <1	<.001	<1		3.6	3.4	27			10.3	2.7	3	2.1	
1,4 dioxane														<.19	.2 J		0.13 <.2	
perfluorobutanoic acid PFBA														2.2	2.7	2.8	3.2	
perfluoropentanoic acid PFPeA														ND	ND	ND	0.056	
perfluorohexanoic acid PFHxA														1	1.3	1.1	1.4	
perfluoroheptanoic acid PFHpA														1.3	1.3	1.2	1.4	
perfluorooctanoic acid PFOA														1.3	1	0.57	1.4	
perfluorononanoic acid PFNA														ND	ND	ND	Nd	
perfluorodecanoic acid PFDA														ND	ND	ND	ND	
perfluoroundecanoic acid PFUnA														ND	ND	ND	ND	
perfluorododecanoic acid PFDoA														ND	ND	ND	ND	
perfluorotridecanoic acid PFTriA														ND	ND	ND	ND	
perfluorotetradecanoic acid PFTeA														ND		0.3 ND	ND	
perfluorobutanesulfonic acid PFBS														1.1	1.1	0.77	0.95	
Perfluorohexanesulfonic acid PFHxS														2.1	2.4	1.5	2.7	
perfluoroheptanesulfonic acid PFHpS														ND	ND	ND	ND	
perfluorooctanesulfonic acid PFOS														ND		0.85 ND	ND	
perfluorodecanesulfonic acid PFDS														ND	ND	ND	ND	
perfluorooctane Sulfonamide FOSA														ND	ND	ND	0.54	
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA														ND	ND	ND	ND	
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA														ND	ND	ND	ND	
6:2 FTS														ND	8.9 ND	ND	ND	
8:2 FTS														ND	ND	ND	ND	
total PFOA/PFAS														17.9	10.95	8.07	11.646	

GM4

Analyte	Units	Jan-91	Apr-91	GM-4D 91	2001	Jan-03	Aug '03	Mar '04	Sept '04	9-04 dup	Mar '05	Sept '05	Apr'06	Oct_06	May_07	Oct_07	May_08	Oct_08	
Well Depth	feet	60	60	91	91	91	91.5	91.5	91.5	91.5	91.5	91.5	91.5	91.5	91.5	32	28	32	91.5
Chloride	mg/l	57	55	210	33.5	45	200	22	37	37	26	31	30.5	32	28				515
TKN	mg/l	0.8	1.4	4.2	0.26	2.67	<.35	0.58	0.53	.497J	1.3	1.4	1.43	<.5	0.503	0.63			2.68
Alkalinity	mg/l	72	64	88	78.9	60	76	68.7	53.5	53.5	71.7	57.6	51.5	32.3	61.6	59.6			68.7
TDS	mg/l	170	180	430	174	162	246	230	140	110	170	160	150	134	138	202			1190
Spec. Cond.	umhos/crr	280	300	710	337	150	165	103	125	125	220	320	260	275	225	345			1940
Hardness	ppm	100	100	100	NS	62.2	63.6	59.9	64.5	64.1	66.2	58.9	52.3		54.7	66.3			315
Aluminum	ppm	.098 B	<.1		NS	0.055	<.013	0.013J	0.022	0.021	<.02	<.02	.00951J	0.0564	0.00719	<.02			0.0238
Mercury	ppm	.00043 J	<.0002	<.0002	NS	<.00002	<.00002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002			<.0002
Antimony	ppm	<.06	<.04	<mdl	NS	0.021	<.002	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025			<.025
Arsenic	ppm	0.0143	0.013	0.015	NS	0.012	0.0057	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025			<.025
Barium	ppm	.007 BJ	.02 B	0.04	NS	0.025	0.027	0.0379	0.051	0.05	0.0466	0.0369	0.0326	0.0345	0.0568	0.0848			0.263
Beryllium	ppm	<.001	<.001	<mdl	NS	0.0048	0.0004	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02			<.02
Boron																			
Cadmium	ppm	.0049 B	0.0051	<mdl	NS	0.0055	0.0015	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01			<.01
Calcium	ppm	21.3	24	25.1	NS	18.6	19	17.5	19.3	19.3	20	17.4	15.7	17.3	16.1	19.7			103
Chromium	ppm	<.006	<.006	<mdl	NS	0.0071	0.0043	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02			<.02
Cobalt	ppm	<.006	<.006	<mdl	NS	0.012	0.004	<.02	0.046	<.02	0.0222	<.02	<.02	0.0983	<.02	<.02			<.02
Copper	ppm	<.005	.0092 B	<mdl	NS	<.0031	<.0029	<.02	<.02	<.02	<.02	<.02	<.02	.00693J	<.02	<.02			<.02
Iron	ppm	28.5	38.3	34	NS	21.1	17.1	0.303	17.2	16.9	18.6	15.6	14.6	0.584	14.2	13.1			36.8
Lead	ppm	<.001 J	<.0022 J	<mdl	NS	<.0024	0.0032	<.015	<.015	<.015	<.015	<.015	<.015	0.0653	0.00628	<.015			0.00529
Magnesium	ppm	4.61 B	4.74 B	5.4	NS	3.82	5.11	3.96	3.95	3.87	3.93	3.76	3.21	3.47	3.41	4.17			14.2
Manganese	ppm	3.09	3.86	6	NS	9.11	10	9.37	8.93	8.79	7.8	6.24	5.09	0.287	5.27	5.26			11.5
Nickel	ppm	<.013	<.009	<mdl	NS	0.0074	0.0036	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02			0.00866
Potassium	ppm	3.14 B	3.52 B	3.200 B	NS	3.68	3.76	4.04	3.75	3.68	3.63	3.84	3.29	4.01	4.01	4.85			9.93
Selenium	ppm	<.0011	<.0011	<mdl	NS	<.0034	<.0043	<.02	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025			<.025
Silver	ppm	<.003	<.003	<mdl	NS	0.07	<.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02			<.02
Sodium	ppm	17.3	21.7	125	NS	18.7	22.9	24.2	21.6	21.4	8.84	24.2	23.8	21.9	24.9	7.49			44.3
Thalium	ppm	<.0022	<.0033	<mdl	NS	<.0044	0.0094	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015			<.015
Vanadium	ppm	<.004	<.005	<mdl	NS	0.0053	<.0005	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02			<.02
Zinc	ppm	<.003	.0094 B	<mdl	NS	0.011	0.0095	<.02	.01J	<.02	.00786J	<.02	.00913J	0.175	0.0169	0.0254			0.0364
Bromide	mg/l				NS	<.5	<.1	0.68	<.1	<.1	<.1	<.1	<.1	0.28	<.1	<.1			5.63
Ammonia	ppm	0.6	0.47	3.8	NS	1.98	<.11	<.05	0.507	0.498	0.552	0.56	0.538	<.05	0.44	0.506			2.26
BOD	mg/l	<10	<3	<mdl	NS	<2.41	<2.41	<2.41	11.8	4.56	<2.41	<2.41	<2.41	<2	<2.41	60.2			6.72
COD	ppm	<40	<40	<mdl	NS	12.9	30.9	<10	<10	<10	<10	<10	4.06J	<10	<10	<10			<10
Nitrate	ppm	<.5	<.5	<mdl	NS	0.072	0.77	0.482	0.295	0.302	0.251	2.02	0.952	2	0.623	0.88			0.478
Phenols	ppm	<.01	<.01	<mdl	NS	0.016	0.017	<.02	<.001	<.001	0.0044	<.01	0.0259	<.01	<.01	0.0319			<.01
Sulfate	ppm	38	44	39	NS	39.1	69.7	37.5	33.6	31	33.4	32.3	34	26.7	29.7	25.8			42.7
TDS	mg/l	170	180	410	NS	162	246	230	140	110	170	160	188	134	138	202			1190
TOC	ppm				NS	<.51	16.4	13	1.27	1.1	<.1	<.1	1.2	<.1	<.1	8.6			5.63

Geraghty & Miller, Inc., 1992, Babylon Landfill RI/FS, Task 2E, Groundwater Sampling.  
rearter than the instrument detection limit but less than contract required detection limit.

J- Estimated value.

NS- Not sampled.





		June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	13-Jun	Dec_13	DEC_13	14-Jun	Dec_14	June_2015	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18	June_19	
TDS	ppm	1740	590	180	180	240	170	220	148	150			166	158	138	158	141		180	165	173	125	175	
TKN	ppm	2.42	3.24	0.6	0.6	0.4	1	1	.51 D	0.41			<.1	0.65	0.13	<.1	0.1	0.82	0.41	<.1	<.1	<.1	0.86	
BOD	ppm	3.8	2.0	<2		<2	<2	2	2 U	<2	<2			6	<2	<2	<1	<2		1	<2	<2	6.1	
TOC	ppm	<0.5	<3	3.8	<.5	<.5	<.5	<.5	1 U	<1			1.3	12.8	0.795	0.537	3.8	<.11	<1		0.61	.76J	12.6	
DO							1.6	1.7	1.89	0.28	7.16		7.39	3.3	2.43	3.79	8.38		<1	4.03	2.68	3.04	0.96	
Turbidity	NTU						28	21	4.5	3.6	4		7.7	<1		2.2	1.3	23			1.3	3.1	4.6	
1,4 dioxane	ug/l																				<.19	.24 J	.14 J	
perfluorobutanoic acid PFBA	ng/l																				7	6.7	ND	
perfluoropentanoic acid PFPeA	ng/l																				7.4	6.8	ND	
perfluorohexanoic acid PFHxA	ng/l																				6.6	6.3	5 J	
perfluoroheptanoic acid PFHpA	ng/l																				6	6.2	4 J	
perfluorooctanoic acid PFOA	ng/l																				14	15	7.6	
perfluorononanoic acid PFNA	ng/l																				2.1	2.4	ND	
perfluorodecanoic acid PFDA	ng/l																				0.79	0.71	ND	
perfluoroundecanoic acid PFUnA	ng/l																				ND	ND	ND	
perfluorododecanoic acid PFDoA	ng/l																				ND	ND	ND	
perfluorotridecanoic acid PFTriA	ng/l																				ND	ND	ND	
perfluorotetradecanoic acid PFTeA	ng/l																				ND	0.37	ND	
perfluorobutanesulfonic acid PFBS	ng/l																				.9.6		1.1	ND
Perfluorohexanesulfonic acid PFHxS	ng/l																					2.4	2.6	ND
perfluoroheptanesulfonic acid PFHpS	ng/l																					0.4	0.31	ND
perfluorooctanesulfonic acid PFOS	ng/l																					15	14	ND
perfluorodecanesulfonic acid PFDS	ng/l																				ND	ND	ND	
perfluorooctane Sulfonamide FOSA	ng/l																				ND	ND	ND	
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ng/l																				ND	ND	ND	
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ng/l																				ND	ND	ND	
6:2 FTS	ng/l																					8.3	ND	ND
8:2 FTS	ng/l																				ND	ND	ND	
total PFOA/PFAS																					69.99	62.49	7.6	

Dec\_19

47.4

0.48

28.1

165

291

6.81

0.024

1.2

52.1

47.4

70

<.0002

<.05

<.005

31.7

.0364J

<.0600

<.0100

.0505J

<.005.0

<.0025

19.3

<.010

<.050

.0106J

1.38

<.0050

3.72

0.683

.0089J

13.6

<.0100

<.0100

25.9

<.0100

<.0500

.0154J

Dec\_19

165

0.48

2.8

6.9

2.66

15.8

<.2

7.3

8.2

6.7

5.7

15

2.1

0.59

ND

ND

ND

ND

0.93

2.3

0.19

11

ND

ND

ND

ND

2.1

ND

62.11



Analyte	Units	GM-5																				
		Jan-91	Apr-91	GM-5D 91	2001	Jan-03	Aug'03	Mar'04	3-04dup	Sept '04	Mar '05	dup	Sept '05	Apr'06	Oct_06	May_07	Oct_07	May_08	Oct_08			
Weil Depth	feet	62	62	91	91	91	91.8	91.8	20	19	25	22.5	22.5	23	23	24.00	91.8	91.8	91.8	91.8	91.8	21.5
Chloride	mg/l	40	70	67	23.3	45	50	20	19	25	22.5	22.5	23	23	24.00	24	17	20.5	23.5	23.5	21.5	
TKN	mg/l	8.2	16	14	bmdl	3.5	0.41	1.81	0.86	0.804	2.15	2.2	1.45	1.76J	0.64	0.445	0.443	0.636	0.537	0.604	0.604	
Alkalinity	mg/l	130	240	230	46.4	40	60	44.4	56.6	57.6	66.7	68.7	56.6	58.6	66.70	64.6	69.7	97	54.5	91.9		
TDS	mg/l	200	350	370	202	200	190	190	140	120	160	160	150	180	124.00	124	162	166	201	200		
Specific Conductance	umhos/cm	400	650	650	288	150	185	125		130	275		340	320	300.00	250	292	256	550	240		
Hardness	ppm	120	130	130	NS	75	79.4	71.1	74.3	75.2	72.3	79.4	71.1	67.5		69.2	72.4	68.1	78.1	0.579		
Aluminum	ppm	.063 B	<.1	1.08	NS	0.1	<.013	.015J	0.0258	1.01	0.0609	0.0947	.0159J	.0124J	0.09	0.0111	<.02	0.0243	.011J	>2		
Mercury	ppm	<.0002	0.00026	0.0005	NS	<.00002	<.00002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	>10	
Antimony	ppm	<.060	<.04	<mdl	NS	<.0065	<.002	<.025	<.025	<.025	.0114J	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	21.5	
Arsenic	ppm	0.019	0.0189	0.024	NS	0.013	0.014	<.025	<.025	<.025	0.0261	.0212 J	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	65.3	
Barium	ppm	.077 B	.177 B	0.242	NS	0.033	0.044	0.0422	0.0508	0.06	0.0551	0.0502	0.0442	0.0384	0.06	0.0598	0.0654	0.0697	0.0772	0.00109		
Beryllium	ppm	<.001	<.001	<mdl	NS	<.00002	0.0004	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.109	
Cadmium	ppm	0.0071	<.005	<mdl	NS	0.0008	0.0029	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.0246	
Calcium	ppm	33.3	36.8	120	NS	21.6	23	20.2	21.4	22	21.8	20.8	21.1	20.3	18.00	20.7	21.5	20.4	24.4	65.6		
Chromium	ppm	<.006	<.006	0.052	NS	<.001	<.0016	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.00505	<.02	<.02	<.02	<.02	0.112	
Cobalt	ppm	<.006	<.0149	<mdl	NS	0.0011	<.0004	<.02	.015J	0.083	0.029	0.0663	<.02	<.02	0.09	<.02	<.02	<.02	<.02	<.02	>0.025	
Copper	ppm	.0024 BJ	0.0048	0.0938	NS	<.0031	<.0029	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	0.00873	.0037J	>0.025	
Iron	ppm	24.5	42.1	40	NS	32.7	33.5	15	31.2	31.4	30.2	29.3	30.4	28.9	25.00	30.1	32.4	29.6	31.6	0.0857		
Lead	ppm	<.0011 J	<.0022	0.181	NS	<.0024	0.0067	<.015	<.015	<.015	.00731J	<.015	<.015	<.015	0.07	<.015	<.015	<.015	<.015	<.015	>0.02	
Magnesium	ppm	6.85	10.6	20.7	NS	5.15	5.33	5.05	5.09	4.94	4.33	4.43	4.49	4.09	3.76	4.24	4.56	4.15	4.19	>0.01		
Manganese	ppm	13.3 J	2.22	0.49	NS	3.57	4.26	4.3	4.64	4.45	4.59	4.61	4.82	4.6	4.14	4.97	5.29	4.89	5.27	19.9		
Nickel	ppm	<.013	<.009	0.005	NS	<.0017	0.0017	<.02	<.02	<.02	<.02	.00512J	<.02	<.02	<.02	<.02	<.02	0.00586	<.02	0.0173J		
Potassium	ppm	12.2	20.9	14.7	NS	3.85	3.48	3.74	3.96	3.69	3.32	3.29	3.34	3.2	3.24	3.93	4.12	4.63	5.38	>0.02		
Selenium	ppm	<.011J	<.0022	<mdl	NS	<.0034	<.0043	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	0.00504J	
Silver	ppm	<.003	<.003	<mdl	NS	<.0003	<.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	30.1	
Sodium	ppm	32.1	63.3	59	NS	13.6	14.7	16.3	17	15.2	14.8	14.3	14.6	15.2	15.70	23.1	4.73	7.87	8.13	0.00727J		
Thalium	ppm	<.0022 J	<.0033	<mdl	NS	<.0044	0.018	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	3.77	
Vanadium	ppm	.0043 B	<.005	0.007	NS	0.0016	0.0015	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	4.81	
Zinc	ppm	0.0047	.005 B	0.384	NS	0.0063	0.0097	<.02	.013J	.018J	0.00993	.0113 J	<.02	.00885J	0.17	0.0203	0.0254	0.0466	0.0461	0.00944J		
Bromide	mg/l				NS	<.5	<1	0.72	1.02	<.1	<.1	<.1 J	<.1	<.1	<.1	<.1	<.1	<.5	<2	3.45		
Ammonia	ppm	7.8	15	4	NS	2.19	<.11	0.903	0.763	0.801	0.686	0.771	0.679	0.701	0.57	0.624	0.667	0.672	0.556	>0.025		
BOD	mg/l	<10	4	4	NS	<2.41	6.48	<2.41	<2.41	5.42	4.18	3.09	<2.41	<2.41	<3	35.4	74.6	9.96	<3	>0.02		
COD	ppm	<40	50	60	NS	<4.8	33.1	<10	<10	<10	<10	<10	<10	7.55J	85.70	336	9	<10	<10	6.9		
Nitrate	ppm	<.5	<.5	<mdl	NS	0.058	0.032	<.1	<.1	<.1	.022J	.02 J	0.213	0.131	.058J	<.1	0.331	<.1	<.1	>0.015		
Phenols	ppm	<.001	<.001	<mdl	NS	0.014	0.017	<.02	<.02	<.001	0.0041	0.00421	<.01	<.01	0.12	<.01	0.0377	<.01	0.0292	>0.02		
Sulfate	ppm	43	47	110	NS	41.3	112	44	42.5	35.8	31.3	29.1	33.8	33.6	25.00	27.6	17.6	35.6	33.4	0.0439		
TDS	mg/l	200	350	370	NS	200	190	190	140	120	160	160	150	180	124.00	124	162	166	201	200		
TOC	ppm				NS	<.51	15.6	12.7	12.4	1.6	1.12	1.15	1.4	1.7	<1	8.5	8	1.3	<1	0.604		

>4  
>0.5

Source of 1991 data: Geraghty & Miller, Inc., 1992, Babylon Landfill RI/FS, Task 2E, Groundwater Sampling.  
 B- Concentration is greater than the instrument detection limit but less than contract required detection limit.  
 J- Estimated value.  
 NS- Not sampled.  
 GM-5D 91 averages 2 data sets.



	June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	June_13	Dec_13	June_14	Dec_14	June_15	Dec_15	Jun_16	16-Dec	Jun_17	Dec_17	Aug_18	Dec_18	June_19	Dec_19	
1,4 dioxane																			<.96	.17 J	.084 J	<.2	
perfluorobutanoic acid PFBA																				12	9.2	ND	5.8
perfluoropentanoic acid PFPeA																				58	35	26	9.9
perfluorohexanoic acid PFHxA																				27	19	16	7.4
perfluoroheptanoic acid PFHpA																				16	13	10	6.6
perfluorooctanoic acid PFOA																				23	24	16	16
perfluorononanoic acid PFNA																				3.2	3.7	ND	3
perfluorodecanoic acid PFDA																				0.59	0.85	ND	0.49
perfluoroundecanoic acid PFUnA																				ND	ND	ND	ND
perfluorododecanoic acid PFDoA																				ND	ND	ND	ND
perfluorotridecanoic acid PFTriA																				ND	ND	ND	ND
perfluorotetradecanoic acid PFTeA																				0.3	0.43	ND	ND
perfluorobutanesulfonic acid PFBS																				1.1	1.1	ND	1.1
Perfluorohexanesulfonic acid PFHxS																				2.7	2.4	ND	2.3
perfluoroheptanesulfonic acid PFHpS																				0.42	0.2	ND	ND
perfluorooctanesulfonic acid PFOS																				12	12	7.4	10
perfluorodecanesulfonic acid PFDS																				ND	ND	ND	ND
perfluorooctane Sulfonamide FOSA																				ND	ND	ND	1.2
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA																				ND	ND	ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA																				ND	ND	ND	ND
6:2 FTS																				ND	23	18	2.4
8:2 FTS																				ND	ND	ND	ND
total PFOA/PFAS																				156.31	143.88	93.4	66.19

Analyte	Units	GM-6																		
		Jan-91	Apr-91	GM-6D 91	2001	Jan-03	1-03 dup	2003-Aug	8-03 dup	Mar'04	Sept '04	Mar '05	Sept '05	Apr'06	Oct_06	May_07	Oct_07	May_08	Oct_08	
Well depth	feet	60	60	92	92	93	93	93	93	93	93	93	93	93	93.00	93	93	93	93	
Chloride	mg/l	90	140	160	39	110	170	50	115	<b>380</b>	84	86	76	51	48.00	30	37	22.5	25	
TKN	mg/l	29	43	33	bmdl	25.5	24.9	40.9	37.2	30.4	18	37.4	29.8	2.07J	8.36	5.2	7.1	3.35	5.08	
Alkalinity	mg/l	280	460	550	112	540	548	<b>808</b>	840	509	463	543	440	288	275.00	177	272	136	145	
TDS	mg/l	370	640	740	206	730	838	1340	1150	650	530	620	590	396	334.00	226	354	206	273	
Specific Conductance	umhos/cr	700	800	1200	409	195	NS	430	NS	270	225	900	1020	630	750.00	400	691	333	550	
Hardness	ppm	80	120	165	NS	441	413	536	518	245	339	410	353	221		159	207	112	138	
Aluminum	ppm	.096 B	<.1	<mdl	NS	0.066	0.056	<.013	0.051	0.022	0.022	0.0127J	.0127J	.012J	0.05	0.0097	<.02	0.0157	.016J	
Mercury	ppm	<.0002	<.0002	<mdl	NS	<.00002	<.00002	<.00002	<.00003	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002		<.0002	
Antimony	ppm	<.06	<.04	<mdl	NS	<.0065	<.0065	<.002	0.055	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	
Arsenic	ppm	0.0227	0.016	0.065	NS	0.064	0.059	0.04	0.11	<.025	<.025	0.0284	<.025	<.025	<.025	0.0331	0.0333	<.025	<.025	
Barium	ppm	.175 B	.188 B	0.327	NS	0.45	0.41	0.54	0.52	0.192	0.307	0.377	0.275	0.162	0.20	0.127	0.215	0.083	0.115	
Beryllium	ppm	<.001	<.001	<mdl	NS	<.0002	<.0002	0.0006	0.0006	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	
Cadmium	ppm	<.003	<.005	<mdl	NS	<.0007	<.0007	0.002	<.0007	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	
Calcium	ppm	18.8	24.4	41.1	NS	127	120	164	159	57.9	103	126	106	70.8	60.80	50.5	65.3	35.7	44	
Chromium	ppm	<.006	<.006	<mdl	NS	<.001	<.001	<.0016	<.001	<.02	<.02	.00595J	<.02	<.02	<.02	<.02	<.02	<.02	<.02	
Cobalt	ppm	<.006	<.006	<mdl	NS	0.0023	0.0016	<.0004	0.0093	<.02	0.063	<.02	<.02	<.02	0.11	<.02	<.02	<.02	<.02	
Copper	ppm	<.002 J	.0091 B	.002 J	NS	<.0031	<.0031	<.0029	<.0031	<.02	<.02	<.02	<.02	<.02	.0061J	<.02	<.02	<.02	<.02	
Iron	ppm	13.7	12.7	15.1	NS	34.1	30.6	31.8	30.7	0.197	23.9	28.5	27.1	25.7	20.60	17.3	22.5	15.6	22.5	
Lead	ppm	<.0011 J	.0041 B	.002 B	NS	<.0024	<.0024	0.0086	<.0024	<.015	<.015	<.015	<.015	<.015	0.07	<.015	<.015	<.015	<.015	
Magnesium	ppm	7.41	11.4	17.5	NS	28.9	26.6	30.6	29.3	24.5	20	23.3	21.2	10.7	9.79	7.9	10.6	5.6	6.84	
Manganese	ppm	.543 J	0.808	0.43	NS	0.45	0.43	0.27	0.26	0.0533	0.184	0.243	0.304	0.277	0.33	0.296	0.309	0.492	0.996	
Nickel	ppm	<.013	<.0126	<mdl	NS	0.002	0.002	0.0045	0.0099	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	
Potassium	ppm	31	44.2	45.2	NS	46.1	44.6	39.6	36.3	41.1	27.4	35.4	34.9	18.9	16.10	13.1	20	8.57	9.15	
Selenium	ppm	<.0011	<.0022	<mdl	NS	<.0034	<.00034	<.0043	<.0034	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	
Silver	ppm	<.003	<.003	<mdl	NS	<.0003	<.0003	<.001	0.071	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	
Sodium	ppm	84.4	118	212	NS	80.8	77.3	108	96.1	64.6	52.2	62.1	72.9	37.1	36.00	23.1	8.8	6.82	8.24	
Thalium	ppm	<.0022	<.0033	<mdl	NS	<.0044	<.0044	0.054	<.0044	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	
Vanadium	ppm	.0076 B	<.005	<mdl	NS	0.0033	0.0026	0.0022	0.0022	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	
Zinc	ppm	.0057 B	.0104 B	.007 B	NS	<.0058	<.0058	0.011	0.011	<.02	<.02	.0131J	<.02	.00704J	0.18	0.0133	0.0358	0.0333	0.0317	
Bromide	mg/l				NS	<.5	<.5	3.7	2.6	3.38	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.5	<2	
Ammonia	ppm	27	40	33	NS	23.9	22.9	38.9	40.3	23	14.4	23	19.7	1.27	8.96	6.08	11	3.76	3.52	
BOD	mg/l	29	9	50	NS	<2.41	3.67	9.55	17.4	<2.41	5.11	3.24	3.38	<2.41	<3	45	36.7	63.6	<3	
COD	ppm	90	110	95	NS	68.9	64.5	105	95.8	54.1	43.7	36.3	47.1	25.7	<10	<10	28.6	<10	<10	
Nitrate	ppm	<.5	<.5	0.6	NS	0.075	0.027	0.025	0.14	<.1	<.1	<.1	0.233	0.123	<.1	<.1	0.393	<.1	<.1	
Phenols	ppm	<.001	<.001	<mdl	NS	0.0032	<.001	0.017	0.0098	0.482	0.0126	0.00539	0.0107	<.01	0.02	0.0112	0.0152	<.01	0.0251	
Sulfate	ppm	18	16	10	NS	3.03	4.5	69.7	69.7	18.3	2.39	<.1	3.62	7.36	5.13	24	4.87	30.2	20.9	
TDS	mg/l	370	640	740	NS	730	838	1340	1150	650	530	620	590	396	334.00	226	354	206	273	
TOC	ppm				NS	47.5	62.9	137	168	123	15.2	20.5	14	9.3	6.80	6.4	40	<.1	1.8	

Source of 1991 data: Geraghty & Miller, Inc., 1992, Babylon Landfill RI/FS, Task 2E, Groundwater Sampling.

B- Concentration is greater than the instrument detection limit but less than contract required detection limit.

J- Estimated value.

NS- Not sampled.

GM-6D averaged 2 data sets.



GM6		June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	June_14	14-Dec	June_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18	June_19	19-Dec
1,4 dioxane	ug/l																			19	28.6	5	7.5
perfluorobutanoic acid PFBA	ng/l																			81	85	33	26
perfluoropentanoic acid PFPeA	ng/l																			29	40	ND	14
perfluorohexanoic acid PFHxA	ng/l																			83	97	30	28
perfluoroheptanoic acid PFHpA	ng/l																			19	27	12	11
perfluorooctanoic acid PFOA	ng/l																			130	150	42	41
perfluorononanoic acid PFNA	ng/l																			53	52	8.5	8.8
perfluorodecanoic acid PFDA	ng/l																			1.3	1.3	ND	0.3
perfluoroundecanoic acid PFUnA	ng/l																			ND	ND	ND	ND
perfluorododecanoic acid PFDoA	ng/l																			ND	ND	ND	ND
perfluorotridecanoic acid PFTriA	ng/l																			ND	ND	ND	ND
perfluorotetradecanoic acid PFTeA	ng/l																			ND	0.31	ND	ND
perfluorobutanesulfonic acid PFBS	ng/l																			5	8.3	6.1	6.6
Perfluorohexanesulfonic acid PFHxS	ng/l																			13	15	6	6.4
perfluoroheptanesulfonic acid PFHpS	ng/l																			0.59	ND	ND	0.23
perfluorooctanesulfonic acid PFOS	ng/l																			24	19	7.9	8.7
perfluorodecanesulfonic acid PFDS	ng/l																			ND	ND	ND	ND
perfluorooctane Sulfonamide FOSA	ng/l																			0.75	ND	ND	ND
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ng/l																			ND	ND	ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ng/l																			20	13	ND	5.4
6:2 FTS	ng/l																			3.4	ND	ND	ND
8:2 FTS	ng/l																			ND	ND	ND	ND
total PFOA/PFAS																				482.04	536.51	150.5	163.93







GM-7  
**Analyte**  
 Well\_Depth  
 Chloride  
 TKN  
 Alkalinity  
 TDS  
 Spec\_Conc  
 Hardness  
 Aluminum  
 Mercury  
 Antimony  
 Arsenic  
 Barium  
 Beryllium  
 Cadmium  
 Calcium  
 Chromium  
 Cobalt  
 Copper  
 Iron  
 Lead  
 Magnesium  
 Manganese  
 Nickel  
 Potassium  
 Selenium  
 Silver  
 Sodium  
 Thallium  
 Vanadium  
 Zinc  
 Bromide  
 Ammonia  
 BOD  
 COD  
 Nitrate  
 Phenols  
 Sulfate  
 TDS  
 TOC

GM7	Dec_19
Well Depth	
Chloride	21
TKN	1.9
Alkalinity	261
TDS	464
Spec. Cond.	725
pH	8.43
Ammonia	0.11
Bromide	<.05
COD	69.8
Chloride	21
Hardness	500
Mercury	<.0002

GM7	Dec_19
Nitrate	5.4
Phenolics	<.005
Sulfate	78.8
Aluminum	0.506
Antimony	<.0600
Arsenic	.0068J
Barium	.101J
Beryllium	<.0050
Boron	
Cadmium	<.0025
Calcium	125
Chromium	<.0100
Cobalt	<.0500
Copper	0.0284
Iron	3.22
Lead	0.008
Magnesium	18
Manganese	1.7
Nickel	.0046J
Potassium	6.13
Selenium	<.0100
Silver	<.0100
Sodium	10
Thallium	<.0100
Vanadium	.0083J
Zinc	.0156J
TDS	464
TKN	1.9
BOD	1
TOC	19.1
DO	7.52
Turbidity	12.1
1,4 dioxane	<.2
perfluorobutanoic acid PFBA	5.5
perfluoropentanoic acid PFPeA	5.1
perfluorohexanoic acid PFHxA	5.6
perfluoroheptanoic acid PFHpA	7
perfluorooctanoic acid PFOA	29
perfluorononanoic acid PFNA	8.4
perfluorodecanoic acid PFDA	1.4
perfluoroundecanoic acid PFUnA	ND
perfluorododecanoic acid PFDoA	ND
perfluorotridecanoic acid PFTriA	ND
perfluorotetradecanoic acid PFTeA	ND
perfluorobutanesulfonic acid PFBS	3.9
Perfluorohexanesulfonic acid PFHxS	17
perfluoroheptanesulfonic acid PFHpS	1.1
perfluorooctanesulfonic acid PFOS	69
perfluorodecanesulfonic acid PFDS	ND
perfluorooctane Sulfonamide FOSA	ND
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ND
6:2 FTS	ND
8:2 FTS	ND
total PFOA/PFAS	153

GM-15

Analyte	Units	Jan_91	Apr_91	Apr-91	2001	Jan_03	Aug_03	Mar_04	Sept_04	Mar_05	Sept_05	Apr_06	Oct_06	May_07	Oct_07	Oct_07D	May_08	Oct_08
Well_Depth	feet	52	52	84	84	84	83	83	83.3	83.3	83.3	83.3	83.3	83.3			83.3	83.3
Chloride	mg_l	130	130	200	77	135	<18.3	440	89	90	93	109	111	104	98	94	91	87
TKN	mg_l	38	41	38	26	31.3	34.5	35.6	34	69.6	46	1.52	2.76	24.6	12.4	11.9	21.2	20.3
Alkalinity	mg_l	410	430	720	337	440	440	372	380	356	377	408	417	415	421	421	458	408
TDS	mg_l	570	580	970	460	490	812	400	400	420	480	646	536	486	540	538	460	530
Spec_Cond	umhos_cr	950	1050	1450	976	390	335	230	265	870	1000	950	1125	920	1180	1170	540	1100
Hardness	ppm	110	120	270	NS	138	159	141	147	162	172	109		200	194	193	177	185
Aluminum	ppm	.053 B	<.1	0.15	NS	0.028	<.013	.018J	0.13	<.02	0.0235	0.0963	0.0631	0.0469	<.02	<.02	0.0163	.0134J0
Mercury	ppm	.00039 J	0.0014	0.0008	NS	<.00002	<.00002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002
Antimony	ppm	<.06	<.04	<mdl	NS	<.0065	0.013	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Arsenic	ppm	<.01	.008 B	<mdl	NS	<.0097	0.0077	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Barium	ppm	.34 J	0.328	0.3	NS	0.14	0.16	0.161	0.215	0.224	0.212	0.174	0.3	0.313	0.3	0.303	0.294	0.291
Beryllium	ppm	<.001	<.001	<mdl	NS	<.0002	0.0006	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cadmium	ppm	.0045 B	0.0073	<mdl	NS	<.0007	0.0014	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Calcium	ppm	30.2	26	41	NS	32.5	39.2	32.6	37.3	43.2	42.6	48.8	46.5	54.4	52.1	52.1	47.4	50.1
Chromium	ppm	<.06	<.06	<mdl	NS	<.001	<.0016	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cobalt	ppm	0.0179	0.0113	.01 B	NS	0.0049	0.007	<.02	0.046	0.027	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Copper	ppm	<.0033	<.0031	0.0038	NS	<.0031	<.0029	<.02	<.02	<.02	<.02	<.02	.0057J	<.02	<.02	<.02	0.00302	<.02
Iron	ppm	29.6	29.8 J	22	NS	13	15.1	0.166	15.3	18.9	18.9	24.6	25.2	35.4	36.3	36.1	33.2	32.1
Lead	ppm	0.0018	<.0022	<mdl B	NS	<.0024	0.0068	<.015	<.015	<.015	.0139J	<.015	0.0763	0.00918	<.015	<.015	<.015	<.015
Magnesium	ppm	9.75	8.96	14	NS	13.9	14.8	14.6	13.2	13.1	16	14.1	14.2	15.5	15.4	15.4	14.1	14.4
Manganese	ppm	1.06	0.979	4	NS	1.16	1.22	0.247	1.05	1.19	0.946	0.947	0.813	1.02	1.06	1.07	0.846	0.758
Nickel	ppm	<.013	<.009	<m	NS	0.0041	0.0071	<.02	<.02	<.02	<.02	<.02	.00946J	0.0116	<.02	<.02	0.0118	.0086J
Potassium	ppm	43.8	41.6	55	NS	12	44.4	64.4	52.5	58.9	75	50.2	43	47.8	53.8	54	49.3	45.7
Selenium	ppm	<.0015 J	<.0022	<mdl	NS	<.0034	<.0043	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Silver	ppm	<.003	<.003	<mdl	NS	<.0003	<.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Sodium	ppm	134	117	213	NS	84	114	77.5	64.6	68.2	94.4	74.4	88.5	102	22.8	23.2	28.5	27.6
Thalium	ppm	<.0022	<.0033	<mdl	NS	<.0044	0.025	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015
Vanadium	ppm	<.004	<.005	<mdl	NS	<.0004	0.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Zinc	ppm	<.0033	.0075 B	<mdl	NS	<.0058	0.0099	<.02	<.02	.00653 J	<.02	.0125J	0.204	0.0203	0.0276	0.0293	0.0325	0.034
Bromide	mg_l				NS	<.5	2.4	2.59	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	1.2	<2
Ammonia	ppm	36	40	39	NS	30.1	33.4	33.2	25	51.8	44.1	1.69	15.1	29.8	34.5	33.5	42	34.2
BOD	mg_l	<10	3	6	NS	<2.41	11.5	<2.41	30	5.12	<2.41	5.7	<3	67.9	72.1	56.7	<2.41	<3
COD	ppm	90	80	125	NS	62.2	66.7	34.1	11.4	31.1	43.7	47	38.6	47.9	75.5	74.2	17.3	30.7
Nitrate	ppm	<.5	<.5	<mdl	NS	0.069	0.016	<.1	.0229J	<.1	0.286	0.109	.0517J	0.204	0.375	0.35	<.1	<.1
Phenols	ppm	<.001	<.001	<mdl	NS	<.001	0.014	0.0672	<.001	0.00708	<.01	<.01	0.0208	<.01	0.0219	0.0275	0.159	0.0399
Sulfate	ppm	25	21	6	NS	4.5	69.7	6.5	2.83	5.7	3.96	3	2.93	14.6	<1	<1	14	5.01
TDS	mg_l	570	580	970	NS	490	812	400	400	420	480	646	536	486	540	538	460	530
TOC	ppm				NS	22.4	70.2	89.8	2.23	16.5	16	18	16	17	49	69	11	16

		June_09	Dec_09	June_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	DEC_13	Jun_14	Dec_14	Jun_15	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18
Well_Depth	ft	83.3	83.3							obstruct					DUP							
Chloride	ppm	97.5	87.0	77	76	73	280	78	40.4		93.2	46.8	45	84.2	78.2	923	142	663	138 D	148	137	194
TKN	ppm	38	57.3	24	24	25	27	26	11.4 D		0.27	7.85	9.51	5.89	6.59	13.7	1.44	19.2	9.5 D	0.39	9.6	23.2
Alkalinity	ppm	483	501	340	420	600	420	450	127 D		55.6	137	213	277	283	206	281	235	361	105	371	426
TDS	ppm	610	492	460	530	520	720	530	240			235	974	457	480	1980	534	1340	596	377	568	586
Spec_Cond	umhos_cr	940	1170	890	820	1100	1800	1000	668		426	443	1650	576		3395	918	2526	1161	673	1017	1088
pH			7.91	7.16	6.96	6.9/7.3	6.96	7.19/7.41	7.15		6.94	7.07	7.02	6.85		7.86	4.91	6.96	6.73	6.6	7.55	7.79
Ammonia as N	ppm	33.4	48.0	23	23	24	26	25	7.59 D	.1U	7.43	11.2	6.44	6.94	15.5	0.98	19.9	9.4 D	0.24	9.8	21.7	
Bromide	ppm	<2	<2.00	<.5	5.9	<.5	0.89	1.1	.5 U	.5U	<.5	<.5	0.54	0.53	<.5	0.72	0.57	1.1	1.3	0.35	1.6	
COD	ppm	37.2	14.8	50	80	<40	50	50	14.7	10U	19.1	23.5	27.3	31.7	35.7	26.8	240	42.1	26.2	52.2	74	
Chloride	ppm	97.5	87.0	77	76	73	280	78	40.4			46.8	45	84.2	78.2	923	142	663	138 D	148	137	194
Hardness	ppm	200	252	210	260	230	340		160 D	120D	150	1600	72	68	126	55	192	70	108	96	160	
Mercury	ppm	0.00055	<.000200	<.00025	<.00025	<.00025	<.0002	<.0002	.0002 D	.0001U	<.0001	<.0001	<.0001	<.0001	<.0001	<.0002			<.0002	<.0002	<.0002	<.0002
Nitrate	ppm	0.0874J	<.100	1.4	<.5	<.5	<.5	0.7	.1 U	0.26	<.1	<.0001	0.17	0.14	<.1	3.03	<.05	<.05	<.05	0.28	0.18	
Phenolics	ppm	0.03	0.0168	<.001	<.001	<.001	<.001	<.001	.005 U	.005U	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.002	0.0095	<.005	
Sulfate	ppm	15.2	<2.00	<.5	<.5	4	<.5	<.5	43.7	13.5	30.2	13.9	<.5	<.5	8.03	6.85	<.5	<.5	2	1.8	1.6 J	
Aluminum	ppm	0.0619	0.00965	0.55	<.05	0.23	0.09	<.05	.200 U	0.234	.127 B	.135 B	0.324	0.486	.126 B	0.656			0.113	0.358	816	
Antimony	ppm	<0.025	<0.0250	<.005	<.025	<.025	<0.005	<.025	.060 U	.002U	<.0016	<.003	<.0023	<.0023	<.0006	.0056 J			0.0043	<.06	<.06	
Arsenic	ppm	<0.025	<0.0250	<.005	<.025	0.026	0.007	<.025	.010 U	.001U	.0085 B	.004 B	.0075 E	.0089 B	.0061 B	.0044 J			<.01	<.01	<.01	
Barium	ppm	0.31	0.346	0.11	0.17	0.18	0.25	0.2	.200 U	.0073B	0.0927	0.258	.072 B	.0728 B	0.272	.0464 J			0.0044	.106J	0.251	
Beryllium	ppm	<0.02	<0.0200	<.001	<.005	<.005	<0.001	<.005	.005 U	.00016U	<.000091	<.001	<.0001!	<.00015	<.0002	<.005			<.005	<.005	<.005	
Boron									0.232										0.0096			
Cadmium	ppm	<0.01	<0.0100	<.005	<.025	<.025	<0.005	<.025	.005 U	.0007B	.0003 B	.0045B	.0023 E	.0024 B	<.0001	<.0025	2.9	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	ppm	55.8	72.6	63	79	87	110	93	44	25.2	39.6	63.2	19.4	19.6	37.7	16.4	60.6	18.8	27.1	33.1	58.4	
Chromium	ppm	0.00561J	<0.0200	<.005	<.025	<.025	<0.005	<.025	.010 U	.0027B	.009 B	.0067B	.0064 E	.0064 B	0.0107	<.01			0.002	<.010	.0037 J	
Cobalt	ppm	<0.02	<0.0200	0.008	<.025	<.025	0.007	<.025	.050 U	.00027U	.0062 B	.0125B	.005 B	.0051 B	.0052 B	.0022 J			<.05	.0042J	.0093 J	
Copper	ppm	<0.02	<0.0200	<.01	<.05	<.05	<0.01	<.05	.025 U	.004B	.0052 B	.0052B	.0057 E	.0067 B	.0113 B	.0062 J			<.025	<.025	<.025	
Iron	ppm	31.1	31.1	3.6	24	25	29	32	19.1	0.351	34.8	39.6	11.2	11.3	23.3	8.73	33.7	17.7	1.19	13.5	25.6	
Lead	ppm	0.00654J	0.00347	<.005	<.025	<.025	<0.005	<.025	0.005	0.014	0.0071	.0023B	.0019 E	.0012 B	<.0013	.0015 J	<.005	<.005	<.005	<.005	.0046 J	
Magnesium	ppm	14.6	17.1	14	15	16	18	15	8.07	9.84	8.16	10.4	2.910 E	2.980 B	5.81	2.72	9.25	3.02	11.4	5.82	9.31	
Manganese	ppm	0.664	0.654	0.75	0.4	0.38	0.6	0.44	0.397	0.0372	1.18	2.01	0.669	0.67	0.938	0.21	0.826	0.45	0.134	0.496	0.642	
Nickel	ppm	0.0112J	0.00796	<.01	<.05	<.05	<0.01	<.05	.040 U	.0007B	<.00029	<.0006	.0061 E	.0061 B	.00030 E	.0034 J			0.0022	.0031J	.0028 J	
Potassium	ppm	33.2	32.7	33	33	34	47	41	16.4	4.16B	10.6	18.8	12.5	12.2	23.9	7.68	21.4	10.3	2.05	14.5	24.2	
Selenium	ppm	<0.025	<0.0250	<.01	<.05	<.05	<0.01	<.1	.005 U	.0017U	<.0014	0.0038	<.0027	<.0027	.0031 B	<.01			<.01	<.010	<.01	
Silver	ppm	<0.02	<0.0200	<.005	<.025	<.025	<0.005	<.025	.010 U	.0016U	.0038 B	<.0022	<.0008	<.00087	<.0005	<.010			<.01	<.010	<.01	
Sodium	ppm	26.1	28.3	58	61	67	150	67	24.8	45.7	29.1	301	162	161	683	189	433	222	89	175	129	
Thallium	ppm	<0.015	<0.0150	<.005	<.025	<.025	<0.005	<.025	.010 U	.00096B	<.0035	<.0038	<.001	<.001	.0037 B	<.01			<.01	<.010	<.01	
Vanadium	ppm	<0.02	<0.0200	<.005	<.025	<.025	<0.005	<.025	.050 U	.0004B	.0011 B	<.0007	<.0003!	<.00036	.0048 B	<.050			0.0014	<.050	<.05	
Zinc	ppm	0.0288	0.0413	0.05	<.05	<.05	0.02	<.05	.020 U	0.0302	.0076 B	.0138B	0.022	0.0306	.0044 B	0.0378			0.0055	.015J	0.0246	
TDS	ppm	610	492	460	530	520	720	530	240	218D	235	235	457	480	1980	534			596	377	568	586
TKN	ppm	38	57.3	24	24	25	27	26	11.4 D	0.27	7.85	9.51	5.89	6.59	13.7	1.44			9.5 D	0.39	9.6	23.2
BOD	ppm	<4	2.0	3	<2	<3		16	2 U	2U	<2	<4	5	7	<4		2	<4	3.5	4.6	2.8	5.1
TOC	ppm	7.8	6.7	34	7.6	12		13	<.5			4.5	47.3B	9.1	9.1	8.52	8.05	8.2	9.7	3.7	10.1	18.5
DO							0.78	0.49	0.54		8.38	0.79	1.06	3.04		0.93	4.14	0.64	1.93	4.16	0.34	0.99

	June_09	Dec_09	June_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	DEC_13	Jun_14	Dec_14	Jun_15	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18
Turbidity							280	570	37		58	58	75	68	230	65				144	122
Eh								-100	-142.8		-75	-147.8	-78.7		-136.7		-119				
1,4 dioxane																				16	19.2
perfluorobutanoic acid PFBA																				45	40
perfluoropentanoic acid PFPeA																				24	28
perfluorohexanoic acid PFHxA																				51	46
perfluoroheptanoic acid PFHpA																				18	22
perfluorooctanoic acid PFOA																				100	99
perfluorononanoic acid PFNA																				110	110
perfluorodecanoic acid PFDA																				0.76	0.96
perfluoroundecanoic acid PFUnA																				ND	ND
perfluorododecanoic acid PFDoA																				ND	ND
perfluorotridecanoic acid PFTriA																				ND	ND
perfluorotetradecanoic acid PFTeA																				ND	0.3
perfluorobutanesulfonic acid PFBS																				4.7	5.6
Perfluorohexanesulfonic acid PFHxS																				14	12
perfluoroheptanesulfonic acid PFHpS																				1	ND
perfluorooctanesulfonic acid PFOS																				38	29
perfluorodecanesulfonic acid PFDS																				ND	ND
perfluorooctane Sulfonamide FOSA																				ND	ND
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA																				ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA																				6.3	9.4
6:2 FTS																				14J	ND
8:2 FTS																				ND	ND
total PFOA/PFAS																				428.76	421.46

	Jun_19	19-Dec
Well_Depth		
Chloride	177	210
TKN	25.8	33.2
Alkalinity	372	340
TDS	6	584
Spec_Cond	1123	1250
pH	7.62	7.6
Ammonia as N	22	18.9
Bromide	3	1.8
COD	123	72
Chloride	177	210
Hardness	100	260
Mercury	<.0002	<.0002
Nitrate	0.044	0.05
Phenolics	<.01	<.005
Sulfate	<5	<5
Aluminum	0.429	1.14
Antimony	<.060	<.060
Arsenic	0.0115	.0072J
Barium	0.23	0.329
Beryllium	<.005	<.0050
Boron		
Cadmium	<.0025	<.0025
Calcium	57	76.6
Chromium	.0053J	<.0100
Cobalt	.0075J	.0038J
Copper	<.025	.0143J
Iron	21.2	14.2
Lead	<.005	.0047J
Magnesium	9.18	11.4
Manganese	0.578	0.317
Nickel	.0033J	.0047J
Potassium	22.9	27.8
Selenium	<.010	<.0100
Silver	<.010	<.0100
Sodium	141	110
Thallium	<.010	<.0100
Vanadium	<.050	<.0500
Zinc	.0155J	0.0295
TDS	6	584
TKN	25.8	33.2
BOD	19.9	4.8
TOC	33.6	13.6
DO	3.29	2.75

	Jun_19	19-Dec
Turbidity	144	80
Eh		
1,4 dioxane	16.2	23.8
perfluorobutanoic acid PFBA	48	34
perfluoropentanoic acid PFPeA	26	27
perfluorohexanoic acid PFHxA	52	54
perfluoroheptanoic acid PFHpA	16	18
perfluorooctanoic acid PFOA	84	100
perfluorononanoic acid PFNA	70	93
perfluorodecanoic acid PFDA	ND	0.82
perfluoroundecanoic acid PFUnA	ND	ND
perfluorododecanoic acid PFDoA	ND	ND
perfluorotridecanoic acid PFTriA	ND	ND
perfluorotetradecanoic acid PFTeA	ND	ND
perfluorobutanesulfonic acid PFBS	5.7	5.1
Perfluorohexanesulfonic acid PFHxS	5.7	12
perfluoroheptanesulfonic acid PFHpS	ND	0.45
perfluorooctanesulfonic acid PFOS	9	23
perfluorodecanesulfonic acid PFDS	ND	ND
perfluorooctane Sulfonamide FOSA	ND	0.33
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	2	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	6.8	12
6:2 FTS	1.9	ND
8:2 FTS	ND	ND
total PFOA/PFAS	343.3	403.5



GM-16

Analyte	Units	Jan_91	Apr_91	Apr_91	2001	Jan_03	Aug_03	Mar_04	Sept_04	Mar_05	Sept_05	Apr_06	Oct_06	Oct06Dup	May_07	lay07_du	Oct_07	May_08	Oct_08	Oct_08D
Well_Depth	feet	52	52	77	77	51	77.5	77.5	77.5	77.48	77.48	77.48	77.48	77.48	77.48	77.48		77.48	77.48	77.48
Chloride	mg_l	130	31	210	18.8	35	<18.3	6	16	14	15	15	16	16.5	14.5	14	18	25.5	48.5	49.5
TKN	mg_l	11	10	49	1.39	4.73	2.94	5.87	2.4	4.36	3.64	2.17	1.77	1.94	1.51	1.7	1.25	1.65	1.24	1.15
Alkalinity	mg_l	290	230	840	68	20	180	129	121	131	130	138	141	142	143	142	137	154	144	143
TDS	mg_l	300	290	1100	166	144	212	230	180	180	190	222	192	196	188	172	218	224	308	303
Spec_Cond	umhos_cm	465	445	1850	259	200	160	225	145	310	363	340	460	377	340	330	410	335	410	
Hardness	ppm	200	180	535	NS	52	124	129	127	147	141	135			153	145	151	73	174	171
Aluminum	ppm	<.05	<.1	0.255	NS	0.1	0.047	.019J	0.026	.0116 J	0.15	0.0426	0.0438	0.0456	0.0295	0.0304	<.02	0.106	.0183J	.0186J
Mercury	ppm	<.0002	<.0002	<mdl	NS	<.00002	<.00002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002		<.0002		<.0002	<.0002
Antimony	ppm	<.06	<.04	0.064	NS	<.0065	0.0069	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Arsenic	ppm	0.0119	.0089 B	0.023	NS	<.0097	0.0068	<.025	<.025	.012 J	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Barium	ppm	1.91 J	.142 B	1.3	NS	0.029	0.097	0.0943	0.097	0.113	0.1	0.0944	0.102	0.102	0.114	0.115	0.128	0.129	0.149	0.147
Beryllium	ppm	<.001	<.001	<mdl	NS	<.0002	0.0004	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cadmium	ppm	0.0067	0.005	0.005	NS	0.0011	0.0032	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Calcium	ppm	68.6	58.3	162	NS	16.2	36.9	37.9	39	43.6	43.9	42.9	39.8	39.7	48.8	46.1	48	47.2	56.1	55.1
Chromium	ppm	<.006	<.006	.075 B	NS	<.001	<.0016	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	.0098J	<.02	<.02
Cobalt	ppm	.0116 B	.0108 B	.035 B	NS	0.011	0.004	<.02	0.032	.0146 J	<.02	<.02	0.149	0.148	<.02	<.02	<.02	<.02	<.02	<.02
Copper	ppm	<.0041	.0062 B	0.006	NS	<.0031	<.0029	<.02	<.02	<.02	<.02	<.02	.00534J	0.005	<.02	<.02	<.02	.0106J	.0045J	.0046J
Iron	ppm	26.5	22.6 J	74 J	NS	30.6	11.3	0.331	9.92	12.1	11.2	11	9.39	9.43	11.8	10.6	12	12.4	15.5	15.2
Lead	ppm	<.0025	<.0022	.0036 B	NS	<.0024	0.006	<.015	<.015	<.015	<.015	<.015	0.0885	0.0862	<.015	<.015	<.015	<.015	<.015	<.015
Magnesium	ppm	11.1	8.5	41	NS	2.85	7.64	8.38	7.38	9.21	7.67	6.79	6.5	6.56	7.57	7.17	7.59	7.32	8.19	8.08
Manganese	ppm	0.465	0.437	1.28	NS	1.57	0.59	0.495	0.645	0.745	0.716	0.653	0.598	0.6	0.749	0.67	0.755	0.763	0.998	0.98
Nickel	ppm	<.013	<.009	0.03	NS	0.0019	0.006	<.02	<.02	<.02	.00301 J	<.02	<.02	<.02	<.02	<.02	<.02	.0145J	<.02	<.02
Potassium	ppm	23.2	20.1	98	NS	3.97	14.3	16.9	12.6	12.6	11.8	11.8	10.1	10.2	12.6	12.7	13	12.9	12.6	12.5
Selenium	ppm	<.0011	<.0022	<mdl	NS	<.0034	<.0043	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.02	<.02	<.025	<.025	<.025
Silver	ppm	<.003	<.003	<mdl	NS	<.0003	<.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.025	<.025	<.02	<.02	<.02
Sodium	ppm	20.9	19.1	210	NS	6.17	14.2	16.4	10	10	8.1	8.5	10.7	10.7	12.8	12.5	4.54	6.66	6.96	6.96
Thalium	ppm	<.0022 J	<.0033	<mdl	NS	<.0044	0.025	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015
Vanadium	ppm	<.004	<.005	.005 B	NS	0.0017	0.0008	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Zinc	ppm	.0199 B	0.037	.015 B	NS	0.014	0.025	<.02	<.01	.0089 J	0.0213	.0122J	0.23	0.228	0.0719	0.0154	0.0299	0.0577	0.0433	0.036
Bromide	mg_l				NS	2	<1	1.09	<1	<1	<1	<1	<1	<1	<1	<1	<1	<.5	<2	<2
Ammonia	ppm	36	40	51	NS	2.39	1.8	2.82	2.66	2.48	2.84	1.94	1.64	1.65	1.58	1.61	1.53	1.44	1.61	1.38
BOD	mg_l	<10	3	25	NS	6.17	3.26	3.6	38.4	<2.41	<2.41	13.2	<3	<3	<b>90.8</b>	<2.41	65.6	<2.41	<3	<3
COD	ppm	90	80	160	NS	<4.8	33.1	<10	48.9	<10	<10	5.81J	<10	<10	<10	<10	<10	<10	<10	<10
Nitrate	ppm	<.5	<.5	<mdl	NS	0.13	0.066	<.1	<.1	.0178 J	0.273	0.108	.0609J	0.0601	<.1	<.1	<.1	<.1	<.1	<.01
Phenols	ppm	<.001	<.001	0.001	NS	0.0096	0.015	0.0508	<.001	0.0043	<.01	<.01	0.0302	0.0268	<.01	0.336	0.0459	0.0218	0.0204	0.0208
Sulfate	ppm	25	21	5	NS	29.5	69.7	36.2	21.3	24.4	23.3	21	7.03	5.27	29.4	29.7	22.8	23.4	22.7	21.5
TDS	mg_l	570	580	1100	NS	144	212	230	180	180	190	222	192	196	188		218	224	308	303
TOC	ppm				NS	4.43	28.4	29.3	15.5	2.43	2	2.8	2.5	1.9	<1	<1	5.5	5.3	1.3	1.5



**Analyte**  
TOC

	June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	Jun_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18	June_19
ppm	1.2	5.1	4.9	<.5	1.4	<.5	<40	1 U	1.2	20.7	1.6	15.8	2.2	1.73	4.75	<1	<1	0.88	1.1	2.3	12.5

Analyte	June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	Jun_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18	June_19	
DO						0.46	0.85	0.53	0.92	3.65	0.78	1.12	3.77	0.56	2.17		1.86	1.2	2.75	4.38	4.39	
Turbidity						170	380	37 D	54	20	84	69	47	240	140					351	58.5	18.4
Eh							-100	-124	113.5	12.5	-128.8	-109.9		-63.4								
1,4 dioxane	ug/l																		<.19	0.22	0.087	
perfluorobutanoic acid PFBA	ng/l																		6.7	6.8	ND	
perfluoropentanoic acid PFPeA	ng/l																		10	9.8	ND	
perfluorohexanoic acid PFHxA	ng/l																		7.7	7.3	6.8	
perfluoroheptanoic acid PFHpA	ng/l																		6.3	7.1	5.1	
perfluorooctanoic acid PFOA	ng/l																		12	14	8.8	
perfluorononanoic acid PFNA	ng/l																		13	13	5.2	
perfluorodecanoic acid PFDA	ng/l																		0.7	0.9	ND	
perfluoroundecanoic acid PFUnA	ng/l																		ND	ND	ND	
perfluorododecanoic acid PFDoA	ng/l																		ND	ND	ND	
perfluorotridecanoic acid PFTrIA	ng/l																		ND	ND	ND	
perfluorotetradecanoic acid PFTeA	ng/l																		ND	0.33	ND	
perfluorobutanesulfonic acid PFBS	ng/l																		1.5	1.6	ND	
Perfluorohexanesulfonic acid PFHxS	ng/l																		2.5	2.7	ND	
perfluoroheptanesulfonic acid PFHpS	ng/l																		0.31	ND	ND	
perfluorooctanesulfonic acid PFOS	ng/l																		8.7	8.3		
perfluorodecanesulfonic acid PFDS	ng/l																		ND	ND	ND	
perfluorooctane Sulfonamide FOSA	ng/l																		ND	ND	ND	
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ng/l																		ND	ND	ND	
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ng/l																		ND	ND	ND	
6:2 FTS	ng/l																		ND	ND	ND	
8:2 FTS	ng/l																		ND	ND	ND	
total PFOA/PFAS																			69.41	72.05	25.987	

Analyte	Dec_19
Well_Depth	
Chloride	33.3
TKN	1.4
Alkalinity	50.3
TDS	139
Spec_Cond	242
pH	6.87
Ammonia as N	0.67
Bromide	0.54
COD	38.9
Chloride	33.3
Hardness	200
Mercury	<.0002
Nitrate	<.05
Phenolics	<.005
Sulfate	19.7
Aluminum	0.831
Antimony	<.0600
Arsenic	<.010
Barium	.0448J
Beryllium	<.0050
Boron	
Cadmium	<.0025
Calcium	18.1
Chromium	<.0100
Cobalt	.0106J
Copper	.0078J
Iron	21.1
Lead	0.0088
Magnesium	3.08
Manganese	3.47
Nickel	<.0400
Potassium	3.930J
Selenium	<.010
Silver	<.0100
Sodium	14.3
Thallium	<.010
Vanadium	<.050
Zinc	0.187
TDS	139
TKN	1.4
BOD	2.8

Analyte	Dec_19
DO	2.11
Turbidity	31.8
Eh	
1,4 dioxane	<.2
perfluorobutanoic acid PFBA	6.7
perfluoropentanoic acid PFPeA	9.9
perfluorohexanoic acid PFHxA	6.5
perfluoroheptanoic acid PFHpA	5.5
perfluorooctanoic acid PFOA	9
perfluorononanoic acid PFNA	5.7
perfluorodecanoic acid PFDA	0.45
perfluoroundecanoic acid PFUnA	ND
perfluorododecanoic acid PFDoA	ND
perfluorotridecanoic acid PFTrIA	ND
perfluorotetradecanoic acid PFTeA	ND
perfluorobutanesulfonic acid PFBS	1.2
Perfluorohexanesulfonic acid PFHxS	1.4
perfluoroheptanesulfonic acid PFHpS	ND
perfluorooctanesulfonic acid PFOS	4
perfluorodecanesulfonic acid PFDS	ND
perfluorooctane Sulfonamide FOSA	ND
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ND
6:2 FTS	ND
8:2 FTS	ND
total PFOA/PFAS	50.35

GM-17

Analyte	Units	Jan_91	Apr_91	2001	Jan_03	Aug_03	Mar_04	Sept_04	Mar_05	Sept_05	apr_06	Oct_06	May_07	Oct_07	May_08	Oct_08
Well_Depth	feet	87	87	87	87	86.6	86.6	86.6	86.6	86.6	86.6	86.6	86.6		86.6	86.6
Chloride	mg_l	26	22	NS	40	5	18	14	11	11	12	12	11	9.5	9.5	7.5
TKN	mg_l	0.8	0.4	NS	3.21	<.35	1.61	<.5	2.82	<.5	<.05	<.5	<.5	.217J	<.4	<.4
Alkalinity	mg_l	36	18	NS	4	20	18.2	12.1	14.1	14.1	15.2	11.1	17.2	25.2	14.1	14.1
TDS	mg_l	99	120	NS	116	116	130	88	94	120	116	86	86	88	104	116
Spec_Cond	umhos_cr	195	155	NS	135	145	97.5	75	133	162	155	150	110	166	128	151
Hardness	ppm	58	70	NS	46.9	41.8	54.5	52.6	58.1	56.6	50.4		57.4	58.5	55	55.3
Aluminum	ppm	.12 B	<.1	NS	0.018	0.16	0.0281	<.02	.0104 J	.0142 J	0.0577	0.0802	0.0103	<.02	.0144J	.0115J
Mercury	ppm	<.0002	<.0002	NS	<.00002	<.00002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002		<.0002
Antimony	ppm	<.06	<.06	NS	<.0065	0.0032	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Arsenic	ppm	<.0022	<.0022	NS	<.0097	<.0034	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Barium	ppm	.02 BJ	.017 B	NS	0.012	0.019	0.025	0.024	0.0226	0.0207	.016J	0.0311	0.0273	0.032	0.0321	0.0345
Beryllium	ppm	<.001	<.001	NS	<.0002	0.0003	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cadmium	ppm	.0047 B	<.005	NS	<.0007	0.0004	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Calcium	ppm	12.7	11.4	NS	9.4	8.33	10.5	10.6	10.8	11.3	10.2	9.77	11.6	12	11.8	11.4
Chromium	ppm	<.006	<.006	NS	<.001	0.0021	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cobalt	ppm	<.006	<.006	NS	<.0006	0.0004	<.02	<.02	<.02	<.02	<.02	0.168	<.02	<.02	<.02	<.02
Copper	ppm	<.0027	.004 B	NS	<.0031	<.0029	<.02	<.02	<.02	<.02	<.02	.00691J	<.02	<.02	.00536J	.0061J
Iron	ppm	0.479	<.176 J	NS	0.084	0.21	0.019J	0.063	<.02	0.0254	0.0385	0.0952	0.0144	0.0209	0.0256	0.0264
Lead	ppm	<.0026	.0022 B	NS	<.0024	0.0029	<.015	<.015	<.015	<.015	<.015	0.0964	<.015	<.015	<.015	<.015
Magnesium	ppm	6.29	5.87	NS	5.7	5.1	6.9	6.36	6.62	6.91	6.1	5.86	6.69	6.95	6.2	6.53
Manganese	ppm	0.0257	0.0174	NS	0.0031	0.013	.019J	<.02	<.02	<.02	.00495J	.0062J	<.02	<.02	<.02	<.02
Nickel	ppm	<.013	<.009	NS	<.0017	0.001	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Potassium	ppm	.834 B	.975 B	NS	0.92	1	1.14	0.904	0.822	0.798	0.87	1	1.08	1.19	1.32	1.11
Selenium	ppm	<.0011	<.0022	NS	<.0034	<.0043	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Silver	ppm	<.003	<.003	NS	<.0003	<.001	<.025	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Sodium	ppm	13.8	11.8	NS	6.25	9.26	8.58	6.65	6.21	5.55	6.42	8.33	7.01	2.49	4.04	3.78
Thalium	ppm	<.0022	<.0033	NS	<.00044	0.0076	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015
Vanadium	ppm	<.004	<.005	NS	<.0004	<.0005	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Zinc	ppm	<.0066	.0077 B	NS	<.0058	0.015	0.011	0.022	.0084 J	<.02	.00714J	0.261	0.0186	0.0222	0.0658	0.0402
Bromide	mg_l			NS	2.1	<1	1.56	<.1	.669 J	0.12	<.1	<.1	0.25	<.1	<.5	<2
Ammonia	ppm	<.05	<.05	NS	1.86	<.11	0.114	<.05	<.05	<.05	.0407J	0.0804	0.035	<.05	<.05	<.05
BOD	mg_l	<3	<3	NS	<2.41	<2.41	<2.41	36.6	<2.41	<2.41	5.58	<2	<2.41	63.9	<2.41	<2
COD	ppm	<40	<40	NS	<4.8	28.6	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrate	ppm	3.2	4.8	NS	4.04	4.06	3.5	3.77	1.81	<.1	0.397	5.63	5.23	5.5	5.81	5.07
Phenols	ppm	<.001	<.001	NS	0.011	0.011	0.21	<.001	0.0044	<.01	<.01	0.0919	0.0337	0.0419	<.01	0.0568
Sulfate	ppm	27	26	NS	20	28	33	20.4	21.8	22.7	19.4	31.2	20.3	12.2	19.3	21.3
TDS	mg_l	99	120	NS	116	116	130	88	94	120	116	86	86	88	104	116
TOC	ppm			NS	<.51	12.8	4.4	<1	<1	<1	<1	<1	<1	6.6	<1	<1

		June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	Jun_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18
Well_Depth	feet	86.6	86.6							mar_14											
Chloride	mg_l	10.5	14.5	12	12	14	11	18	10.9	11.4	39.6	44.8	40.5	26.3	25.8	25.8	24.6	19.1	17.9	16.3	24.3
TKN	mg_l	<.4	0.400	0.6	0.4	0.8	0.6	0.2 .1 U	<.1	<.1	<.1	<.1	<.1	0.32 <.1	<.1	<.1	<.1	<.10	<.1	0.12	<.1
Alkalinity	mg_l	15.2	17.7	20	20	16	18	20	11.5	12.9	11	10.8	11.4	12.4	11.2	13.2	12.4	12.8	9.8	10.5	10.5
TDS	mg_l	120	167	120	130	140	110	140	105	150	157	162	140	130	188	116	123	109	101	112	96
Spec_Cond	umhos_cr	100	414	120	120	170	180	200	311	169	157	174	204	150	228	209	195	206	193	226	2300
pH			7.01	6.88	5.6	<b>4.09/6.4</b>	6.85	5.42f/6.2l	5.51	5.09	5.43	5.45	5.82	5.2	5.62	3.51	5.61	5.28	6.07	6.51	7.38
Ammonia as N	ppm	<.05	0.0500	<.2	<.2	0.4	<.2	<.2	.1 U	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.11	<.10	0.053	0.051	<.1
Bromide	ppm	<2	2.00	<.5	<.5	<.5	<.5	<.5	.5 U	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.50	0.07	0.03	.098 J
COD	ppm	<10	10.0	<40	<40	<40	<40	<40	10 U	<10	4.9	<10	<10	<10	10.4	<10	15.1	<10.0	11.4	<10	16.2
Chloride	ppm	10.5	14.5	12	12	14	11	18	10.9	11.4	39.6	44.8	40.5	26.3	25.8	25.8	24.6	19.1	17.9	16.3	24.3
Hardness	ppm	46.8	78.4	52	54	48	57	60	58	60	68	110	60	48	70	60	56	56	42	44	50
Mercury	ppm	0.0007	0.000200	<.00025	<.00025	<.00025	<.0002	<.0002	.0002 U	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0002		<.0002	<.0002	<.0002	<.0002
Nitrate	ppm	4.71	4.40	4.1	3.4	3.54	3.9	3.4	4.51 D	4.68	3.23	3.22	3.17	4.59	4.16	4.36	3.9	3.5 D	3.1	2.4	2.5
Phenolics	ppm	0.0382	0.0682	<.001	<.001	<.001	0.003	<.001	.005 U	<.0005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.0043	.0038 J
Sulfate	ppm	23.2	22.8	22	23	30	31	37	36.8	31.1	19.5	20.4	19.4	35.8	35.5	36.3	34.2	34	38	37.2	45.4
Aluminum	ppm	0.0826	0.0180	0.68	<.05	0.19	<b>0.16</b>	<.05	.200 U	0.212	0.0315	.0619B	.0697B	.116 B	0.271	.0808 J		0.0262	.0703J	0.0856	
Antimony	ppm	<.025	0.0250	<.005	<.025	<.025	<.0005	<.025	.060 U	.0022 B	<.0019	<.0016	<.003	<.0023	<.0006	<.060		<.06	<.060	<.06	<.06
Arsenic	ppm	<.025	0.0250	<.005	<.025	<.025	<.0005	<.025	.010 U	<.0028	<.0011	<.0015	<.0033	<.0013	<.0022	<.010		<.01	<.010	<.01	<.01
Barium	ppm	0.0446	0.0736	0.023	<.025	<.025	<b>0.022</b>	0.025	.200 U	<.0232 B	.031 B	.0341B	.0318B	.0306 B	.0312 B	.0307 J		<b>0.0264</b>	.0228J	0.0229	0.0229
Beryllium	ppm	<.02	0.0200	<.001	<.005	<.005	<.0001	<.005	.005 U	<.0001	<.00014	<.000091	<.0001	.0002 B	<.0002	<.005		<.005	<.005	<.005	<.005
Boron									.100 U											<b>0.0214</b>	
Cadmium	ppm	<.01	0.0100	<.005	<.025	<.025	<.0005	<.025	.005 U	<.0001	<.00011	<.00014	<.0002	<.00016	.0001 B	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	ppm	9.59	20.3	11	11	12	12	14	13.1	12.3	14.6	15.3	15.3	13.9	12.9	13.3	13.1	12.2	11.3	10.5	10.7
Chromium	ppm	0.00537J	0.0200	<.005	<.025	<.025	<.0005	<.025	.010 U	.0023 B	.0034 B	.001B	.003 B	.0042 B	.0096 B	<.010		<.01	<.010	<.01	<.01
Cobalt	ppm	<.02	0.0200	<.005	<.005	<.025	<.0005	<.025	.050 U	<.0004	<.00019	<.00016	<.0006	<.00025	.0002 B	<.050		<.05	<.050	<.05	<.05
Copper	ppm	0.00945J	0.00744	<.01	<.05	<.05	<.01	<.05	.025 U	.0012 B	.005 B	.0008B	.0007B	.00060 E	.0012 B	.0005 J		<.025	<.025	<.025	<.025
Iron	ppm	0.179	0.0582	0.71	0.12	0.47	<b>0.22</b>	0.09	0.111	0.253	.0351 B	.0616B	.0681B	0.223	0.445	0.149	<.1	<b>0.23</b>	0.0454	<b>0.0672</b>	0.1
Lead	ppm	<.015	0.0150	<.005	<.025	<.025	<.0005	<.025	0.006	0.0111	0.0115	0.0152	.0023B	0.01	.0031 B	.0025 J	<.005	<.005	<.005	<.005	.0019 J
Magnesium	ppm	5.54	6.73	5.8	6.4	6.8	<b>6.7</b>	7.3	7	6.55	8	8.39	8.3	7.55	7.78	7.04	7.38	<b>6.53</b>	6.22	5.91	5.66
Manganese	ppm	0.00962J	0.00725	0.05	<.05	<.05	<b>0.02</b>	<.05	.015 U	0.0312	0.0063	.0059B	.008B	.0125 B	0.0151	.0099 J	<.01	<b>0.0168</b>	<b>0.0056</b>	.0038J	.0034 J
Nickel	ppm	<.02	0.0200	<.01	<.05	<.05	<.01	<.05	.040 U	.0016 B	.0013 B	.0004B	.0009 E	.0018 B	.0015 B	<.040		<.04	<.0400	<.04	<.04
Potassium	ppm	0.815	4.43	1.3	<.5	<.5	<b>1.2</b>	<.5	5.000 U	1.06 B	2.17 B	1.5B	1.230 E	2.660 B	<.210 U	.920 J	<.5	<.5	1.22	1.530J	1.81
Selenium	ppm	<.025	0.0250	<.01	<.05	<.05	<.01	<.1	.005 U	<.0023	<.0011	.0016B	<.0038	<.0027	<.0022	<.010		<.01	<.010	<.01	<.01
Silver	ppm	<.02	0.0200	<.005	<.025	<.025	<.0005	<.025	.01 U	<.0002	<.00043	<.00037	<.0022	<.00087	<.0005	<.010		<.01	<.010	<.01	<.01
Sodium	ppm	3.82	10.6	7.5	6.6	8.2	<b>7.6</b>	13	7.64	7.25	12.2	11.6	11.9	12.9	18.3	13.6	11.3	12.3	14.1	13.4	11.2
Thallium	ppm	<.015	0.0150	<.005	<.025	<.025	<.0005	<.025	.010 U	<.0019	<.0013	<.0035	<.0038	<.001	.002 B	<.010		<.01	<.010	<.01	<.01
Vanadium	ppm	<.02	0.0200	<.005	<.025	<.025	<.0005	<.025	.050 U	.0004 B	.0004 B	.0007B	<.0007	<.00036	<.0028	<.050		<.05	0.00084J	<.05	<.05
Zinc	ppm	0.0334	0.0448	<b>0.11</b>	<.05	<.05	<b>0.04</b>	<.05	.020 U	.0189 B	.0144 B	.0061B	.0106B	0.0316	.0192 B	.0122 J		<b>0.0031</b>	.0128J	.0137 J	.0137 J
TDS	ppm	120	167	120	130	140	110	140	105	150	162	140	130	188	116			109	101	112	96
TKN	ppm	<.4	0.400	0.6	0.4	0.8	0.6	0.2 .1 U	<.1		<.1	<.1	<.1	0.32 <.1	<.1	<.1	<.1	<.1	<.1	0.12	<.1
BOD	ppm	<3	2.0	<2		<2	<2	3.3 2 U	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	1	<2	<2



TOC

ppm	June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	Jun_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18
	<0.5	0.5	2.1	<.5	<.5	<.5	<.5	1 U	<1	4.9	<1	3.3	0.5	1.22	<1	<1	<1	0.46	1.3	2.1

	June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	Jun_14	Dec_14	Jun_15	Dec_15	Jun_16	Dec_16	Jun_17	Dec_17	Aug_18	Dec_18
DO						1.9	0.92	2.99	2.11	2.85	2.58	2.7	4.51	3.26	4.7	2.74	6.34	2.49	4.09	6.35
Turbidity						3.7	2	1.2	1.9	<1	<1	<1	<1	2.6	1.6				1.4	1.2
Eh							130	76.2	81.6	101.1	178.5	204		12.6		195				
1,4 dioxane																			<.19	0.16
perfluorobutanoic acid PFBA																			6	6.5
perfluoropentanoic acid PFPeA																			7.9	7.5
perfluorohexanoic acid PFHxA																			7.3	7.5
perfluoroheptanoic acid PFHpA																			6.3	6.7
perfluorooctanoic acid PFOA																			15	16
perfluorononanoic acid PFNA																			2.2	3
perfluorodecanoic acid PFDA																			1.2J	1.3
perfluoroundecanoic acid PFUnA																			ND	ND
perfluorododecanoic acid PFDoA																			ND	ND
perfluorotridecanoic acid PFTriA																			ND	ND
perfluorotetradecanoic acid PFTeA																			ND	ND
perfluorobutanesulfonic acid PFBS																			1.6J	1.8 J
Perfluorohexanesulfonic acid PFHxS																			2.6	2.4
perfluoroheptanesulfonic acid PFHpS																			0.25	ND
perfluorooctanesulfonic acid PFOS																			9.6	8.1
perfluorodecanesulfonic acid PFDS																			ND	ND
perfluorooctane Sulfonamide FOSA																			ND	ND
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA																			ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA																			ND	ND
6:2 FTS																			ND	ND
8:2 FTS																			ND	ND
total PFOA/PFAS																			57.15	59.16

	June_19	Dec_19
Well_Depth		
Chloride	23.7	30.6
TKN	1.7	0.63
Alkalinity	26.7	16.3
TDS	118	114
Spec_Cond	2340	2.3
pH	7.23	6.24
Ammonia as N	0.87	0.43
Bromide	1.1	0.47
COD	30	23.4
Chloride	23.7	30.6
Hardness	40	63.3
Mercury	<.0002	<.0002
Nitrate	0.028	0.68
Phenolics	<.01	<.005
Sulfate	36.2	34
Aluminum	<.200	0.214
Antimony	<.060	<.0600
Arsenic	<.010	<.010
Barium	.256J	.0282J
Beryllium	<.005	<.0050
Boron		
Cadmium	<.0025	<.0025
Calcium	12.1	13.4
Chromium	<.010	<.0100
Cobalt	<.050	<.0500
Copper	<.025	.0150J
Iron	0.249	0.413
Lead	.0031J	.0034J
Magnesium	6.44	6.96
Manganese	0.0265	0.027
Nickel	<.040	<.0400
Potassium	<5.000	<5.000
Selenium	<.010	<.0100
Silver	<.010	<.0100
Sodium	11.5	11.6
Thallium	.0041J	<.0100
Vanadium	<.050	<.0500
Zinc	.0189J	0.035
TDS	118	114
TKN	1.7	0.63
BOD	1	1

TOC

June_19	Dec_19
10	3.8

	June_19	Dec_19
DO	2.05	1.75
Turbidity	1.2	2
Eh		
1,4 dioxane	0.077	<.2
perfluorobutanoic acid PFBA	5.9	5.7
perfluoropentanoic acid PFPeA	6.4	7.8
perfluorohexanoic acid PFHxA	5.4	6.7
perfluoroheptanoic acid PFHpA	3.4	5.2
perfluorooctanoic acid PFOA	6.9	12
perfluorononanoic acid PFNA	0.82	1.6
perfluorodecanoic acid PFDA	ND	0.67
perfluoroundecanoic acid PFUnA	ND	ND
perfluorododecanoic acid PFDoA	ND	ND
perfluorotridecanoic acid PFTriA	ND	ND
perfluorotetradecanoic acid PFTeA	ND	ND
perfluorobutanesulfonic acid PFBS	0.66	1.2
Perfluorohexanesulfonic acid PFHxS	0.57	1.8
perfluoroheptanesulfonic acid PFHpS	ND	ND
perfluorooctanesulfonic acid PFOS	2	5.6
perfluorodecanesulfonic acid PFDS	ND	ND
perfluorooctane Sulfonamide FOSA	ND	ND
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ND	ND
6:2 FTS		31
8:2 FTS	ND	ND
total PFOA/PFAS	63.127	48.27

GM-18

Analyte	Units	Jan_91	Apr_91	Apr-91	2001	Jan_03	Aug_03	Mar_04	Sept_04	Mar_05	Sept_05	Apr_06	Oct_06	May_07	Oct_07	May_08	Oct_08
Well_Depth	feet	54	54	87	87	87	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
Chloride	mg_l	120	140	140	88.7	135	99	140	61	56	65	19.3	75	70	70	68	39.5
TKN	mg_l	3.2	3.6	9	1.2	4.36	8.01	3.16	2.15	3.65	3.54	2.34	1.15	0.652	0.701	0.818	0.443
Alkalinity	mg_l	128	160	100	84.2	120	120	109	105	104	98	123	106	84.8	108	125	110
TDS	mg_l	390	470	390	350	428	505	320	290	270	300	408	318	394	322	292	360
Spec_Cond	umhos_cr	480	650	555	564	290	250	152.5	140	415	480	465	510	425	568	468	475
Hardness	ppm	140	28	105	NS	140	142	136	130	138	145	170		156	158	151	152
Aluminum	ppm	<.5	0.264	.125 B	NS	0.031	0.023	0.0208	0.161	.0148 J	.0149 J	0.0339	0.0639	0.039	0.0434	0.0209	.0169J
Mercury	ppm	<.0002	0.0012	0.0013	NS	<.00002	<.00003	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002
Antimony	ppm	<.06	<.04	<mdl	NS	<.0065	0.0078	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Arsenic	ppm	<.0022	<.0022	<mdl	NS	0.01	0.02	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Barium	ppm	.056 B	.056 B	.052 B	NS	0.053	0.057	0.0868	0.083	0.0705	0.0776	0.0732	0.106	0.107	0.114	0.119	0.112
Berylium	ppm	<.001	<.001	<mdl	NS	<.0002	0.0003	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cadmium	ppm	<.003	<.005	0.0047	NS	<.0007	<.0007	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Calcium	ppm	36.5	48.5	29.2	NS	49.5	50.4	47.6	46.2	45.8	51.1	59.6	44.5	53.8	54	51.7	52.3
Chromium	ppm	.0063 B	<.006	<mdl	NS	<.001	0.0027	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Cobalt	ppm	.0065 B	<.006	.0075 B	NS	<.0006	0.0035	<.02	<.02	<.02	<.02	<.02	0.163	<.02	<.02	<.02	<.02
Copper	ppm	<.002 J	<.0064	<mdl	NS	<.0031	<.0031	<	<.02	<.02	<.02	<.02	.00743J	<.02	<.02	0.00499	.0083J
Iron	ppm	<.035	<.319 J	.17 J	NS	0.065	0.021	0.02	0.079	<.02	.0181 J	0.0265	0.0583	0.0134	0.035	0.0228	0.047
Lead	ppm	<.0018	<.0022	0.01	NS	<.0024	<.0024	<.015	<.015	<.015	<.015	<.015	0.0909	<.015	<.015	<.015	<.015
Magnesium	ppm	5.15	7.17	5.3	NS	3.99	3.84	4.28	3.69	3.64	4.15	5.26	4.3	5.15	5.7	5.31	5.24
Manganese	ppm	7.59 J	12.6	4.2 J	NS	3.42	3.38	3.28	3.05	2.71	2.91	3.3	2.47	3.23	3.69	3.84	4.22
Nickel	ppm	<.013	<.009	<mdl	NS	<.0017	0.0028	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Potassium	ppm	6.37	6.61	11	NS	49.5	32	54.5	41.4	38.8	42.6	34.2	24.6	27.2	29.7	28	26.4
Selenium	ppm	<.0011	<.0022	<mdl	NS	<.0034	<.0034	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025
Silver	ppm	<.003	<.003	<mdl	NS	<.0003	0.0037	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Sodium	ppm	77.6	88	92	NS	35.6	34.5	33.6	25.6	22.1	26.2	31	26	23.3	7.9	11.8	12.3
Thalium	ppm	0.0023 B	<.0033	<mdl	NS	<.0044	<.0044	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015	<.015
Vanadium	ppm	<.004	.0058 B	<mdl	NS	<.0004	<.0004	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Zinc	ppm	.0072 B	.0165 B	.0099 B	NS	<.0058	0.01	.0097J	.009J	.00671 J	<.02	.00674J	0.252	0.0154	.0198J	.0181J	0.0291
Bromide	mg_l				NS	1.4	1.6	1.4	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.82	<2
Ammonia	ppm	2.7	3.4	8.8	NS	3.83	1.96	2.49	2.04	1.82	1.7	1.45	1.28	0.677	0.616	0.498	0.341
BOD	mg_l	3	9	5	NS	<2.41	21.6	<2.41	10.3	<2.41	<2.41	<2.41	<2	<2.41	62.3	<2.41	<2
COD	ppm	<40	<40	<mdl	NS	<4.8	17.4	<10	12.4	<10	<10	<10	<10	<10	<10	<10	<10
Nitrate	ppm	<.5	<.5	<mdl	NS	0.038	<.025	<.1	<.1	.017 J	0.13	0.258	0.791	0.544	0.3	<.1	<.1
Phenols	ppm	<.001	<.001	<mdl	NS	0.01	<.011	0.101	<.001	0.00487	<.01	<.01	0.0172	0.0217	0.034	<.01	0.0455
Sulfate	ppm	41	40	46	NS	53.1	83.9	92.1	52.4	51	47.9	41.7	24.5	34.8	37.9	38.5	20.8
TDS	mg_l	390	470	390	NS	428	505	320	290	270	300	408	318	394	322	292	360
TOC	ppm				NS	5.53	22.1	24.4	2.82	2.59	2	4.1	1.9	1.6	15	1.3	2.1

		June_09	Dec_09	Jun_10	Dec_10	Jun_11	DEC_11	Jun_12	Dec_12	Jun_13	Dec_13	Jun_14	Dec_14	Jun_15	Dec_15	Jun_16	Jun_16X	Dec_16	Jun_17
Well_Depth	feet	87.4	87.4								mar_14								
Chloride	mg_l	171	21.0	63	64	100	80	58	60.9 D	79 D	105	78.5	105	119	118	184	182	163	87.2 D
TKN	mg_l	0.651	1.26	1.6	4.8	1.8	5.4	2.2	1.14	0.68	1.62	0.81	2.45	1.29	0.59	1.39	1.56	1.3	0.51
Alkalinity	mg_l	109	116	120	130	140	140	120	112 D	85.6 D	116	104	114	88.2	98.3	99.6	97.6	114	100
TDS	mg_l	644	649	300	310	410	270	340	302	394	402	325	370	372	433	548	532	509	304
Spec_Cond	umhos_cr	610	724	410	390	650	590	600	701	592	392	428	581	405	648	751		676	563
pH			7.29	7.01	7	6.45/7.0	7.25	6.68/7.31	6.82	6.53	7.07	6.95	7.12	6.55	7.1	4.51		6.72	6.94
Ammonia as N	ppm	0.409	0.559	1	4.4	1.4	5	1.6	0.82	0.32	0.99	0.46	2.42	0.67	0.58	1.09	1.02	1.2	0.34
Bromide	ppm	>2	2.00	<.5	5.5	<.5	0.67	<.5	.5 U	0.71	0.97	0.69	0.95	1.14	0.89	1.6	1.67	1.7	0.61
COD	ppm	>10	10.0	<40	<40	<40	50	40	13.4	11.8	10.2	15.3	14.6	11	<10	22.5	28.9	31.7	
Chloride	ppm	171	21.0	63	64	100	80	58	60.9 D	79 D	105	78.5	105	119	118	184	182	163	87.2 D
Hardness	ppm	204	238	140	130	170	140	188 D	180 D	180	180	650	190	176	250	124	240		132
Mercury	ppm	0.00098	0.000200	<.00025	<.00025	<.00025	<.0002	<.0002	.0002 U	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0002	<.0002		
Nitrate	ppm	>0.1	0.100	1	<.5	<.5	<.5	<.5	.1 U	0.5	0.68	0.25	<.1	0.39	0.89	0.18	0.12	0.14	2.6 D
Phenolics	ppm	0.0288	0.0100	<.001	<.001	<.001	<.001	<.0001	.005 U	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.0093	<.005	<.005
Sulfate	ppm	13.8	19.1	16	21	33	26	47	61.3 D	54.1 D	24.5	43	33	37	36.5	33	33.7	31.4	14.8
Aluminum	ppm	0.0662	0.0228	1.1	0.21	1.4	0.19	<.05	.200 U	.111 B	0.323	0.261	0.286	1.04	.0657 B	2.44	0.721		
Antimony	ppm	>0.025	0.0250	<.005	<.025	<.025	<0.005	<.025	.060 U	.0046 B	.0024 B	<.0016	<.003	<.0023	<.0006	<.060	<.060		
Arsenic	ppm	<0.025	0.0250	<.005	<.025	<.025	<0.005	<.025	0.016	<.0028	<.0011	<.0015	<.0033	<.0013	<.0022	<.010	<.010		
Barium	ppm	0.18	0.234	0.055	0.11	0.09	0.11	<.064	9.62	.0476 B	.0928 B	.0541B	0.112	.0763 E	.0562 B	.0871 J	.0771 J		
Beryllium	ppm	>0.02	0.0200	<.001	<.005	<.005	<0.001	<.005	.005 U	<.0001	<.00014	<.000091	<.0001	<.0001!	<.0002	<.005	<.005		
Boron									1.87										
Cadmium	ppm	>0.01	0.0100	<.005	<.025	<.025	<0.005	<.025	.005 U	<.0001	.0012 B	<.00014	.0004B	.0002 E	.0001 B	.0002 J	<.0025	<.0025	<0.0025
Calcium	ppm	70.2	81.9	47	45	59	48	43	15500 D	60.7	68.6	62.7	65.5	68.8	69.8	91.5	88.6	87.8	44.3
Chromium	ppm	<0.02	0.0200	<.005	<.025	<.025	0.006	<.025	0.013	.0061 B	.005 B	.0018B	0.031	0.072	.0098 B	.0082 J	.004 J		
Cobalt	ppm	<0.02	0.0200	<.005	<.025	<.025	<0.005	<.025	.05 U	.0019 B	.001 B	.0017B	.0009B	.0063 E	.0017 B	.0035 J	.0024 J		
Copper	ppm	0.00548J	0.00517	<.01	<.05	<.05	<0.01	<.05	.025 U	.0008 B	.0112 B	.0034B	.0061B	.0068 E	.001 B	.0168 J	.0055 J		
Iron	ppm	0.081	0.0730	1.4	0.35	1.5	0.27	0.82	0.715	0.126	0.365	0.215	0.463	1.28	.0501 B	2.66	0.746	0.177	0.374
Lead	ppm	>0.015	0.0150	0.006	<.025	<25	<0.005	<.025	0.03	.0025 B	.0035 B	0.0073	0.003	0.004	<.0013	0.0172	0.0054	<.005	<.005
Magnesium	ppm	7.09	8.08	4.5	3.9	6.4	4	4.4	6.5	5.37	5.1	5.31	5.02	5.84	5.92	7.23	6.68	6.68	3.91
Manganese	ppm	6.96	10.2	0.65	3.8	<.05	6	5.8	1.52	3.52	3.16	4.01	4.19	4.96	4.38	5.88	5.64	4.66	0.574
Nickel	ppm	<0.02	0.0200	<.01	<.05	<.05	<0.01	<.05	.040 U	.0039 B	.0018 B	.001B	.0149 E	.0353 E	.0047 B	.0056 J	.0038 J		
Potassium	ppm	24.6	27.3	15	19	24	21	17	7050 D	13.8	15.8	14.2	15.8	16.9	16.9	17.5	16.9	19.3	20
Selenium	ppm	<0.025	0.0250	<.01	<.05	<.05	<0.01	0.1	0.009	0.0065	<.0011	<.0014	<.0038	<.0027	<.0022	<.010	<.010		
Silver	ppm	<0.02	0.0200	<.005	<.025	<.025	<0.005	<.025	.010 U	.00026 B	<.00043	.00051B	<.0022	<.0008	<.0005	<.010	<.010		
Sodium	ppm	14.3	24.1	29	30	39	38	29	13200 D	28.5	28.6	33.2	41.7	33.6	37.9	41.1	39.3	43	42.7
Thallium	ppm	<0.015	0.0150	<.005	<.025	<.025	<0.005	<.025	.010 U	0.0081	<.0013	0.0149	<.0038	<.001	0.0182	<.010	<.010		
Vanadium	ppm	<0.02	0.0200	<.005	<.025	<.025	<0.005	<.025	.050 U	<.0003	<.00039	.0003B	<.0007	.0016 E	<.0028	<.050	<.050		
Zinc	ppm	0.0418	0.0342	0.2	0.06	0.31	0.04	0.09	.020 U	0.0318	0.122	0.0639	0.028	0.174	.0067 B	0.366	0.126		
TDS	ppm	644	649	300	310	410	270	340	302	394	402	325	370	372	433	548			304
TKN	ppm	0.651	1.26	1.6	4.8	1.8	5.4	2.2	1.14	0.68		0.81	2.45	1.29	0.59	1.39			0.51
BOD	ppm	<2	2.0	3	<2	<2		9.2	2 U	<2	<2	<2	3	4	<2	<2		<.002	<2





	Dec_17	Aug_18	Dec_18	Jun_19	Dec_19
Well_Depth					
Chloride	95	96.5	135	172	115
TKN	5	4	2.9	3.1	2.5
Alkalinity	142	156	141	136	115
TDS	316	326	294	408	140
Spec_Cond	598	924	1061	1130	682
pH	6.93	7.21	7.78	7.47	7.2
Ammonia as N	4.1	3.5	1.7	2.5	1.9
Bromide	0.61	0.52	0.76	1.1	0.66
COD	24.1	25.7	20.3	16.8	25.6
Chloride	95	96.5	135	172	115
Hardness	140	107	150	140	140
Mercury	<.0002	<.0002	<.0002	<.0002	<.0002
Nitrate	<.05	<.05	<.05	0.032	<.05
Phenolics	0.0011	0.0033	.0043 J	0.013	<.005
Sulfate	25.6	25.9	24.5	10.3	13.3
Aluminum	0.061	314	.166 J	.137J	<.200
Antimony	<.06	<.060	<.06	<.060	<.0600
Arsenic	<.01	<.010	<.01	<.010	<.0100
Barium	0.136	.147J	.13 J	.136J	.126J
Beryllium	<.005	<.005.0	<.005	<.005	<.0050
Boron	0.0709				
Cadmium	<.0025	0.000085J	.00017 J	<.0025	<.0025
Calcium	47.7	53.4	51.9	52.4	44.3
Chromium	<.01	.002J	.0018 J	<.010	<.0100
Cobalt	<.05	.0012J	<.05	<.050	<.0500
Copper	0.0035	.0049J	.0042 J	.0127J	<.0250
Iron	0.081	0.345	0.179	0.213	0.106
Lead	0.0014	.0015J	<.005	<.005	<.0050
Magnesium	4.29	5.19	4.72	4.67	3.85
Manganese	3.93	3.76	3.2	3.35	2.33
Nickel	0.0013	<.040	<.04	<.040.0	<.040
Potassium	25.4	25.9	25.8	25.4	23.9
Selenium	<.01	<.010	<.01	<.010.0	<.010
Silver	<.01	<.010	<.01	<.010.0	<.010
Sodium	50.6	46.7	51.5	67.3	57.3
Thallium	0.0099	<.010	.0043 J	.0091J	<.010
Vanadium	<.05	.001J	<.05	<.050	<.050
Zinc	0.0051	0.0515	.0118 J	0.0379	<.020
TDS	316	326	294	408	350
TKN	5	4	2.9	3.1	2.5
BOD	1	<2	<2	5.8	1

	Dec_17	Aug_18	Dec_18	Jun_19	Dec_19
TOC	3.3	3.2	2.9	4	2.6
DO	1	2.71	3.7	2.91	4.61
Turbidity (NTU)		9.3	2.8	1.6	0.5
Eh					
1,4 dioxane		<.19	0.19	.15 J	<.2
perfluorobutanoic acid PFBA		27	30	27	17
perfluoropentanoic acid PFPeA		70	62	29	54
perfluorohexanoic acid PFHxA		50	44	25	31
perfluoroheptanoic acid PFHpA		19	18	17	18
perfluorooctanoic acid PFOA		26	34	33	25
perfluorononanoic acid PFNA		5.1	6.1	10	7.4
perfluorodecanoic acid PFDA		1.3	1.7	3.6	3.6
perfluoroundecanoic acid PFUnA		1.6J	1.9	2.8	2.4
perfluorododecanoic acid PFDoA		ND	ND	ND	ND
perfluorotridecanoic acid PFTriA		ND	ND	ND	ND
perfluorotetradecanoic acid PFTeA		ND	ND	ND	ND
perfluorobutanesulfonic acid PFBS		2.5	2.7	5.8	2.4
Perfluorohexanesulfonic acid PFHxS		6.3	7.3	11	8
perfluoroheptanesulfonic acid PFHpS		0.48	0.35	0.58	0.24
perfluorooctanesulfonic acid PFOS		22	24	31	25
perfluorodecanesulfonic acid PFDS		ND	ND	ND	ND
perfluorooctane Sulfonamide FOSA		0.38	0.7	1.3	0.94
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA		ND	ND	ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA		ND	ND	2.6	1.9
6:2 FTS		58	40	6.2	52
8:2 FTS		ND	ND	ND	ND
total PFOA/PFAS		288.06	272.94	205.88	248.88

GM-19

Analyte	Units	Jan_91	Apr_91	May_07	Oct_07	May_08	Oct_08	June_09
Well Depth	feet	87.4	87.4	88.56		88.56	88.56	88.56
Chloride	mg/l	19	27	33	38	50.5	38.4	21.5
TKN	mg/l	0.8	0.6	<.5	.155J	<.4	<.4	<.4
Alkalinity	mg/l	14	14	10.1	10.1	10.6	10.1	10.1
TDS	mg/l	130	120	216	216	210	207	153
Spec. Cond.	umhos/cm	140	155	200	306	248	225	145
Hardness	ppm	88	64	70.2	70.9	79.3	74.1	
Aluminum	ppm	0.07	0.927	0.424	0.389	0.0476	.0196J	
Mercury	ppm	<.0002	0.0013	<.0002	<.0002		<.0002	
Antimony	ppm	<.06	<.04	<.025	<.025	<.025	<.025	
Arsenic	ppm	<.0022	<.0022	<.025	<.025	<.025	<.025	
Barium	ppm	0.027	0.031	0.0673	0.0637	0.0733	0.0706	
Beryllium	ppm	<.001	<.001	<.02	<.02	<.02	<.02	
Cadmium	ppm	<.03	<.005	<.01	<.01	<.01	<.01	
Calcium	ppm	17.7	15.3	20.5	21	23.3	21.9	
Chromium	ppm	<.006	<.006	<.02	<.02	<.02	<.02	
Cobalt	ppm	<.006	<.006	<.02	<.02	<.02	<.02	
Copper	ppm	<.002	<.0071	<.02	<.02	.00424J	.0053J	
Iron	ppm	0.07	1.4	0.391	0.596	0.0571	0.0333	
Lead	ppm	<.0015	0.0032	<.015	<.015	<.015	<.015	
Magnesium	ppm	3.65	3.54	4.62	4.46	5.14	4.72	
Manganese	ppm	0.0038	0.0388	0.0145	<.02	.00615J	.0051J	
Nickel	ppm	<.013	<.009	<.02	<.02	<.02	<.02	
Potassium	ppm	1.48	1.69	3.07	2.76	3.51	3	
Selenium	ppm	<.0011	<.0022	<.025	<.025	<.025	<.025	
Silver	ppm	<.003	<.003	<.02	<.02	<.02	<.02	
Sodium	ppm	10.9	10.2	18.9	4.73	7.79	7.02	
Thalium	ppm	<.0022	<.0033	<.015	<.015	<.015	<.015	
Vanadium	ppm	<.004	<.005	<.02	<.02	<.02	<.02	
Zinc	ppm	0.0084	0.0043	0.0178	0.0587	.0179J	0.0415	
Bromide	mg/l			<.1	<.1	<.5	<2	
Ammonia	ppm	<.05	<.05	0.143	<.05	0.0648	<.05	
BOD	mg/l	<3	<3	12.6	57.4	<2.41	<2	
COD	ppm	<40	<40	<10	3.55J	<10	<10	
Nitrate	ppm	4.4	4.9	4.71	4.34	6.61	4.14	
Phenols	ppm	<.001	<.01	<.01	0.059	<.01	0.0812	
Sulfate	ppm	31	26	31	24.8	27.5	36.2	
TDS	mg/l			216	216	210	207	
TOC	ppm			<1	0.88	<1	<1	





	Aug_18	Dec_18	June_19	19-Dec
Well_Depth				
Chloride	48.6	136	107	54.3
TKN	<.1	<.1	0.91	1.3
Alkalinity	6.2	5.5	6.2	4.9
TDS	171	244	324	177
Spec_Cond	914	1580	1420	335
pH	6.11	6.52	6.13	6.73
Ammonia as N	0.06	2	0.065	0.037
Bromide	0.21	0.79	1.3	0.76
COD	<10	24.4	12.4	12.4
Chloride	48.6	136	107	54.3
Hardness	54	100	80	65
Mercury	<.0002	<.0002	<.0002	<.0002
Nitrate	3.3	2.7	3.2	2.8
Phenolics	0.0033	.0038 J	<.01	<.005
Sulfate	23.3	25.3	26.9	30.7
Aluminum	0.209	.0944 J	0.22	.194J
Antimony	<.060	<.06	<.060	<.0600
Arsenic	<.010	<.01	<.010	<.0100
Barium	.0407J	.0827 J	.0761J	.0536J
Beryllium	<.005	<.005	<.005	<.0050
Boron				
Cadmium	0.00032J	.00025 J	<.0025	<.0025
Calcium	18.6	31.9	30.1	20.7
Chromium	<.010	<.01	<.010	<.0100
Cobalt	0.00076J	<.05	<.050	<.0500
Copper	<.025	<.025	<.025	<.0250
Iron	0.242	0.0832	0.248	0.218
Lead	<.005	.0014 J	<.005	.0039J
Magnesium	3.76	6.11	4.49	2.67
Manganese	.0091J	.0064 J	0.0125	0.0102
Nickel	<.040	.0018 J	<.040	<.0400
Potassium	3.660J	5.61	5.37	4.230J
Selenium	<.010	<.01	<.010	<.010
Silver	<.010	<.01	<.010	<.010
Sodium	17.4	32.2	32.6	27.2
Thallium	<.010	<.01	.0039J	<.010
Vanadium	<.050	<.05	<.050	<.050
Zinc	0.0295	.0078 J	.0130J	<.020
TDS	171	244	324	177
TKN	<.01	<.1	0.91	1.3
BOD	<2	<2	1.7	1
TOC	0.52	5.8	2.6	0.51
DO	4.16	4.64	4.57	6.51
Turbidity	1.9	<1	2	0.66
Eh				
1,4 dioxane	0.16	0.14	0.16	0.24
perfluorobutanoic acid PFBA	7.1	11 B	8.3	6.9
perfluoropentanoic acid PFPeA	11	30	15	12
perfluorohexanoic acid PFHxA	13	23	14	15
perfluoroheptanoic acid PFHpA	11	14	12	17

	Aug_18	Dec_18	June_19	19-Dec
perfluorooctanoic acid PFOA	64		48	61
perfluorononanoic acid PFNA	3.5		3.9	4.1
perfluorodecanoic acid PFDA	1.3		1.3	1.2
perfluoroundecanoic acid PFUnA	ND	ND	ND	ND
perfluorododecanoic acid PFDoA	ND	ND	ND	ND
perfluorotridecanoic acid PFTriA	ND	ND	ND	ND
perfluorotetradecanoic acid PFTeA	ND	ND	ND	ND
perfluorobutanesulfonic acid PFBS	2.8		4.7	2
Perfluorohexanesulfonic acid PFHxS	12B	5 B		3.6
perfluoroheptanesulfonic acid PFHpS	2.2		1.1	0.85
perfluorooctanesulfonic acid PFOS	72		40	39
perfluorodecanesulfonic acid PFDS	ND	ND	ND	ND
perfluorooctane Sulfonamide FOSA	ND	ND	ND	0.42
n-methyl perfluorooctanesulfonamidoacetic acid NMeFOSAA	ND	ND	ND	ND
n-ethyl perfluorooctane sulfonamidoacetic acid NEtFOSAA	ND	ND	ND	ND
6:2 FTS	ND	ND		3.5
8:2 FTS	ND	ND	ND	ND
total PFOA/PFAS	188.06	166.14	164.71	254.96

Ca Background 12-24 mg/l

	GM-4	GM-5	GM-6	GM-7	GM-15	GM-16	GM-17	GM-18	GM-19
Apr'1991	25	120	41	102	41	162	11.4	29	17
Dec'2001									
1/1/2003	18.6	21.6	127	96.5	32.5	16.2	9.4	49.5	
8/1/2003	19	23	164	76	39.2	36.9	8.33	50.4	
1/1/2004	17.5	20.2	57.9	114	32.6	37.9	10.5	47.60	
9/1/2004	19.3	22	103	119	37.3	39	10.6	46.2	
Mar '05	20	21.8	126	120	43.2	43.6	10.8	45.8	
Sept '05	17.4	21.1	106	64.3	42.6	43.9	11.3	51.1	
Apr'2006	15.7	20.3	70.8	97	48.8	42.9	10.2	59.6	
Oct '06	17.3	18	60.8	61.9	46.5	39.8	9.77	44.5	
May_07	16.1	20.7	50.5	85.3	54.4	46.1	11.6	53.8	20.5
Oct_07	19.7	21.5	65.3	54.3	52.1	48	12	54	21
May_08	103	20.4	35.7	112	47.4	47.2	11.8	51.7	23.3
Oct_08	18.1	24.4	44	57	50.1	56.1	11.4	52.3	21.9
Jun_09	101	19.9	60.5	55.7	55.8	46.7	9.59	70.2	16.6
Dec_09	47.8	19.4	61.3	71.8	72.6	44.9	20.3	81.9	18.6
June_10	21	20	49	62	63	35	11	47	15
DEC_10	16	22	66	170	79	44	11	45	14
Jun_11	21	23	74	130	87	43	12	59	15
DEC_11	17	22	74	170	110	44	12	48	15
Jun_12	17	32	51	68	93	46	14	43	15
Dec_12	16.9	24.9	78.9	66.8	44	43.3	13.1		12.4
Jun-13	16.2	24.6	80.1	129		31.9	12.3	60.7	12
Dec_13	19	25.8	80.8	101	25.2	31.7	14.6	68.6	13.2
Jun_14	18.2	25.6	104	66.7	39.6	29.3	15.3	62.7	12.9
Dec_2014	16.7	NA	NA	117	63.2	27.9	15.3	65.5	13.7
Jun_15	17	24	25	131	20	35	14	69	15
Dec_15	16.4	29.6	104	113	37	34	12	69	15
Jun_16	17.8	26.9	108	240	16.4	11.8	13.3	91.5	16.7
Dec_16	17.1		180		60.6	27.6	13.1	87.8	17.5
Jun_17	21.3	26.3	189	199	18.8	11.8	12.2	44.3	18.4
Dec_17	20.8	31.1	222	201	27.1	17.9	11.3	47.7	
Aug_18	17.8	27.6	148	191	33.1	18.7	10.5	53.4	18.6
Dec_18	18	23.6	203	146	58.4	17.1	10.7	51.9	31.9
June_19	18.7	22.1	92	171	57	18	12.1	52.4	30.1
Dec_19	19.3	20.1	79.1	125	76.6	18.1	13.4	44.3	20.7



**Groundwater Network for Chloride-background 13  
to 25 mg/l Wells at background in red.**

	GM-3	GM-4	GM-5	GM-6	GM-7	GM-15	GM-16	GM-17	GM-18	GM-19
1991	70	190	75	160	95	190	230	24	135	20
2001		33	23	39	92	77	19	9	89	
Jan-03		45	45	110	55	135	35	40	135	
Aug-03		200	50	50	0	0	0	5	99	
Jan-04		22	20	380	85	440	6	18	140	
Sep-04		37	25	84	312	89	16	14	61	
Mar '05		26	22.5	86	196	90	14	11	56	
Sept ' 05		31	23	76	97	93	15	11	65	
Apr'06		30.5	23	51	130	109	15	12	19.3	
Oct '06		32	24	48	115	111	16	12	75	
May_07	2050	28	24	30	70.5	104	14	11	70	33
Oct_07	1240	32	17	37	85	94	18	9.5	70	38
May_08	1030	515	20.5	22.5	37	91	25	9.5	68	50
Oct_08	1170	37	23.5	25	91	87	48.5	7.5	39.5	38.4
June_09		590	21.5	47	57.5	97.5	40.5	10.5	171	21.5
Dec_09		215	27	43	34	87	33	14.5	21	19
June_10		35	20	34	40	77	22	12	63	17
Dec_10		24	20	40	55	76	16	12	64	18
Jun_11		39	65	75	40	73	23	14	100	26
DEC_11		32	24	58	31	280	18	11	80	27
Jun_12		36	180	38	31	78	30	18	58	26
Dec_12		36.9	33.8	78.9	55.6	40.4	22.7	10.9	60.9	17.4
June_13		38.9	34.8	77.7	32.2		15.3	11.4	79	17.7
13-Dec		30.4	33.5	96.9	53.5	93.2	15.8	39.6	105	16.6
Jun_14		32.7	34.3	111	126	46.8	16.4	44.8	78.5	20.9
Dec_14		41	NA	NA	44	45	16	40	105	20
June_15		40	58	14	189	78	40	26	119	24
Dec_15		40	244	182	296	923	49	26	118	27
Jun_16		38	104	161	34	142	17	25	184	32
Dec_16		44.5		157		663	39.6	24.6	163	36.1
Jun_17		49.7	29.6	143	13.4	138	16.8	19.1	87.2	41.7
Dec_17		49.7	242	249	697	148	16.2	17.9	95	-
Aug_18		47.3	228	229	20.5	137	25	16.3	96.5	48.6
18-Dec		48.9	239	280	23.3	194	40.4	24.3	135	136
19-Jun		183	221	106	5.8	177	35.4	23.7	172	107
Dec_19		47.4	176	121	21	210	33	30.6	115	54.3

**Groundwater network for Alkalinity-Background in red (2 to 50 mg/l).**

	GM-3	GM-4	GM-5	GM-6	GM-7	GM-15	GM-16	GM-17	GM-18	GM-19
Jan-91	8.0	78	190	540	430	705	920	25	100	14
Mar-91		68	230	520	400	690	840	18	110	
Jun-05		79	46	112	324	337	68	38	84	
Jan-03		60	40	540	210	440	20	4	120	
Aug-03		76	60	808	200	440	180	20	120	
Jan-04		69	44	509	113	372	129	18	109	
Sep-04		53	57	463	62	380	121	12	105	
Mar '05		71.7	66.7	543	135	356	131	14.1	104	
Sept '05		57.6	56.6	440	126	377	130	14.1	98	
Mar '06		51.5	58.6	288	257	408	138	15.2	123	
Oct '06		32.3	66.7	275	185	417	141	11.1	106	
May_07	3.0	61.6	64.6	177	219	486	142	17.2	84.8	10.1
Oct_07	10.1	59.6	69.7	272	306	421	137	25.2	108	10.1
May_08	4.04	68.7	97	136	320	458	154	14.1	125	10.6
Oct_08	5.05	49.5	54.5	145	335	408	144	14.1	110	10.1
Jun_09		56.6	91.9	295	280	483	152	15.2	109	10.1
Dec_09		62.6	92.9	301	183	501	170	17.7	116	12.1
June_10		38	76	170	180	340	140	20	120	16
DEC_2010		28	76	260	230	420	140	20	130	8
Jun_11		44	66	280	320	600	170	16	140	8
DEC_11		44	68	290	350	420	170	18	140	10
Jun_12		50	52	160	170	450	110	20	120	16
Dec_12		42.8	58.1	262	148	127	117	11.5	112	7.1
Jun_13		31.2	60.6	262	296		68.8	12.9	85.6	6.3
Dec_13		17.1	58.5	274	164	55.6	69.5	11	116	8.25
Jun_14		20.4	60.5	365	118	137	63.5	10.8	104	6.75
Dec_14		42.8	NA	NA	238	213	66.6	11.4	114	6.8
Jun_15		43	40	60	191	283	72	12	88	7
Dec_15		38	59	303	82	206	74	11	98	6
Jun_16		21	28	224	491	281	120	13	99	7
Dec_16		48.2		734		235	96	12.4	114	8.2
Jun_17		46.2	58.4	849	521	361	42.2	12.8	100	9.2
Dec_17		14	40	855	70.2	105	42.2	9.8	142	No sam
Aug_18		17.6	13.7	549	517	371	41.1	10.5	156	6.2
Dec_18		16.7	56.2	758	441	426	47.7	10.5	141	5.5
June_19		32.9	51.2	262	470	372	44.6	26.7	136	6.2
Dec_19		28.1	55.8	240	261	340	50	16.3	115	4.9

Groundwater network for TKN Wells at background in red (0 (< mdI) to 5.8 mg/l).

	GM-3	GM-4	GM-5	GM-6	GM-7	GM-15	GM-16	GM-17	GM-18	GM-19
Apr'1991	2.00	4.00	10.00	35.00	23.00	42.00	54.00	0.60	9.00	0.70
Dec'2001		0.26	0.00	0.00	10.00	26.00	1.40	0.43	1.20	
1/1/2003		2.70	3.50	25.00	10.00	31.00	4.70	3.20	4.30	
8/1/2003		0.00	0.41	40.00	1.60	34.50	2.94	0.00	8.01	
1/1/2004		0.58	1.80	30.00	2.90	36.00	5.90	1.60	3.20	
9/1/2004		0.50	0.80	18.00	1.99	34.00	2.40	0.00	2.15	
Mar '05		1.30	2.15	37.40	1.33	69.60	4.36	2.82	3.65	
Sept '05		1.40	1.45	29.80	1.94	46.00	3.64	0.00	3.84	
Apr'2006		1.40	1.76	2.07	0.85	1.52	2.17	0.00	2.34	
Oct '06		0.00	0.64	8.36	1.11	2.76	1.77	0.00	1.15	
May_07	4.14	0.50	0.40	5.20	1.11	24.60	1.70	0.00	0.60	0.00
Oct_07	1.15	0.63	0.44	7.1	4.06	11.90	1.25	0.22	0.70	0.16
May_08	1.18	2.68	0.60	3.35	2.02	21.20	1.65	0.00	0.80	0.00
Oct_08	2.02	0.70	0.54	5.08	24.20	20.30	1.24	0.00	0.44	0.00
Jun_09		2.42	0.60	8.3	17.00	38.00	1.39	0.00	0.65	0.00
Dec_09		3.24	0.70	13	3.71	57.30	1.21	0.40	1.26	0.40
June_10		0.60	1.00	5	4.40	24.00	1.40	4.40	1.60	0.60
DEC_10		0.60	0.40	1.8	9.60	24.00	1.20	0.40	4.80	0.40
Jun_11		0.40	0.80	9.8	1.60	25.00	1.20	0.80	1.80	0.40
DEC_11		1.00	2.20	9.4	2.4	27.00	1.40	0.60	5.40	0.00
Jun_12		1.00	1.00	4	1.2	26.00	1.20	0.20	2.20	0.20
Dec_12		0.51	0.53	12.9	1.83	11.40	0.84	0.10	1.14	0.10
Jun_13		0.41	0.42	13.5	1.59		1.83	0.1	0.68	0.10
Dec_13		0.35	0.63	12.9	2.05	0.27	0.99	<.1	1.62	0.39
Jun_14		<.1	0.42	16.8	1.58	7.85	1.64	<.1	0.81	<.1
Dec_2014		0.65	NA	NA	1.79	9.51	0.63	<.1	2.45	<.5
Jun_15		0.13	<.5	1.92	<.5	6.59	1.32	0.32	1.29	<.1
Dec_15		<.1	0.57	13.5	0.64	13.70	0.74	<.1	0.59	<.1
Jun_16		0.10	0.49	11	1.4	1.44	0.69	<0.1	1.39	<0.1
Dec_16		0.82		31.5		19.20	1.00	<.1	1.30	0.33
Jun_17		0.41	0.33	50.6	1.4	9.50	0.31	<.1	0.51	<.1
Dec_17		<.1	0.33	53.5	4	0.39	<.1	<.1	5.00	
Aug_18		<.1	4.8	35.5	1.8	9.60	0.56	0.12	4.00	<.1
Dec_18		<.1	0.77	49.4	1.9	23.20	0.47	<.1	2.90	<.1
June_19		0.86	0.46	9.6	1.9	25.80	2.10	1.7	3.10	0.91
Dec_19		0.48	0.28	12.5	1.9	33.20	1.40	0.63	2.50	1.3

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-2D**  
**Date Collected: 12/27/19 13:20**  
**Date Received: 12/31/19 08:45**

**Lab Sample ID: 320-57406-1**  
**Matrix: Water**

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	3.2		2.0	0.36	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluoropentanoic acid (PFPeA)	0.56	J	2.0	0.50	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorohexanoic acid (PFHxA)	1.4	J	2.0	0.59	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluoroheptanoic acid	1.4	J	2.0	0.25	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.87	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.28	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.32	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.56	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.30	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorobutanesulfonic acid (PFBS)	0.95	J	2.0	0.20	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorohexanesulfonic acid (PFHxS)	2.7	B	2.0	0.17	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.55	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.33	ng/L		01/08/20 05:30	01/08/20 19:18	1
Perfluorooctanesulfonamide (FOSA)	0.54	J	2.0	0.36	ng/L		01/08/20 05:30	01/08/20 19:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.2	ng/L		01/08/20 05:30	01/08/20 19:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		01/08/20 05:30	01/08/20 19:18	1
6:2 FTS	ND		20	2.0	ng/L		01/08/20 05:30	01/08/20 19:18	1
8:2 FTS	ND		20	2.0	ng/L		01/08/20 05:30	01/08/20 19:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	64		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C5 PFPeA	59		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C2 PFHxA	67		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C4 PFHpA	70		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C4 PFOA	64		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C5 PFNA	66		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C2 PFDA	67		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C2 PFUnA	72		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C2 PFDoA	73		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C2 PFTeDA	73		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C3 PFBS	72		25 - 150	01/08/20 05:30	01/08/20 19:18	1
18O2 PFHxS	67		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C4 PFOS	74		25 - 150	01/08/20 05:30	01/08/20 19:18	1
13C8 FOSA	60		25 - 150	01/08/20 05:30	01/08/20 19:18	1
d3-NMeFOSAA	64		25 - 150	01/08/20 05:30	01/08/20 19:18	1
d5-NEtFOSAA	65		25 - 150	01/08/20 05:30	01/08/20 19:18	1
M2-6:2 FTS	67		25 - 150	01/08/20 05:30	01/08/20 19:18	1
M2-8:2 FTS	61		25 - 150	01/08/20 05:30	01/08/20 19:18	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-4D**  
 Date Collected: 12/27/19 10:38  
 Date Received: 12/31/19 08:45

**Lab Sample ID: 320-57406-2**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	7.3		1.9	0.33	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluoropentanoic acid (PFPeA)	8.2		1.9	0.46	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorohexanoic acid (PFHxA)	6.7		1.9	0.55	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluoroheptanoic acid	5.7		1.9	0.23	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorooctanoic acid (PFOA)	15		1.9	0.80	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorononanoic acid (PFNA)	2.1		1.9	0.25	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorodecanoic acid (PFDA)	0.59	J	1.9	0.29	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorobutanesulfonic acid (PFBS)	0.93	J	1.9	0.19	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorohexanesulfonic acid (PFHxS)	2.3	B	1.9	0.16	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.19	J	1.9	0.18	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorooctanesulfonic acid (PFOS)	11		1.9	0.51	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		01/08/20 05:30	01/08/20 19:28	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		01/08/20 05:30	01/08/20 19:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		01/08/20 05:30	01/08/20 19:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		01/08/20 05:30	01/08/20 19:28	1
6:2 FTS	2.1	J	19	1.9	ng/L		01/08/20 05:30	01/08/20 19:28	1
8:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/08/20 19:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	75		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C5 PFPeA	66		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C2 PFHxA	84		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C4 PFHpA	78		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C4 PFOA	81		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C5 PFNA	94		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C2 PFDA	107		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C2 PFUnA	106		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C2 PFDoA	95		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C2 PFTeDA	91		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C3 PFBS	82		25 - 150				01/08/20 05:30	01/08/20 19:28	1
18O2 PFHxS	76		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C4 PFOS	84		25 - 150				01/08/20 05:30	01/08/20 19:28	1
13C8 FOSA	91		25 - 150				01/08/20 05:30	01/08/20 19:28	1
d3-NMeFOSAA	157	*	25 - 150				01/08/20 05:30	01/08/20 19:28	1
d5-NEtFOSAA	176	*	25 - 150				01/08/20 05:30	01/08/20 19:28	1
M2-6:2 FTS	253	*	25 - 150				01/08/20 05:30	01/08/20 19:28	1
M2-8:2 FTS	362	*	25 - 150				01/08/20 05:30	01/08/20 19:28	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-5D**  
**Date Collected: 12/27/19 11:18**  
**Date Received: 12/31/19 08:45**

**Lab Sample ID: 320-57406-3**  
**Matrix: Water**

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	5.8		1.9	0.34	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluoropentanoic acid (PFPeA)	9.9		1.9	0.47	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorohexanoic acid (PFHxA)	7.4		1.9	0.56	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluoroheptanoic acid	6.6		1.9	0.24	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorooctanoic acid (PFOA)	16		1.9	0.82	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorononanoic acid (PFNA)	3.0		1.9	0.26	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorodecanoic acid (PFDA)	0.49	J	1.9	0.30	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.9	0.19	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorohexanesulfonic acid (PFHxS)	2.3	B	1.9	0.16	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorooctanesulfonic acid (PFOS)	10		1.9	0.52	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/08/20 05:30	01/08/20 19:38	1
Perfluorooctanesulfonamide (FOSA)	1.2	J	1.9	0.34	ng/L		01/08/20 05:30	01/08/20 19:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		01/08/20 05:30	01/08/20 19:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		01/08/20 05:30	01/08/20 19:38	1
6:2 FTS	2.4	J	19	1.9	ng/L		01/08/20 05:30	01/08/20 19:38	1
8:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/08/20 19:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	81		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C5 PFPeA	73		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C2 PFHxA	85		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C4 PFHpA	89		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C4 PFOA	85		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C5 PFNA	88		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C2 PFDA	85		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C2 PFUnA	80		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C2 PFDoA	77		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C2 PFTeDA	78		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C3 PFBS	87		25 - 150	01/08/20 05:30	01/08/20 19:38	1
18O2 PFHxS	85		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C4 PFOS	84		25 - 150	01/08/20 05:30	01/08/20 19:38	1
13C8 FOSA	75		25 - 150	01/08/20 05:30	01/08/20 19:38	1
d3-NMeFOSAA	75		25 - 150	01/08/20 05:30	01/08/20 19:38	1
d5-NEtFOSAA	73		25 - 150	01/08/20 05:30	01/08/20 19:38	1
M2-6:2 FTS	109		25 - 150	01/08/20 05:30	01/08/20 19:38	1
M2-8:2 FTS	97		25 - 150	01/08/20 05:30	01/08/20 19:38	1



# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-6D**  
**Date Collected: 12/27/19 11:55**  
**Date Received: 12/31/19 08:45**

**Lab Sample ID: 320-57406-4**  
**Matrix: Water**

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	26		1.9	0.33	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluoropentanoic acid (PFPeA)	14		1.9	0.47	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorohexanoic acid (PFHxA)	28		1.9	0.55	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluoroheptanoic acid	11		1.9	0.24	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorooctanoic acid (PFOA)	41		1.9	0.81	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorononanoic acid (PFNA)	8.8		1.9	0.26	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorodecanoic acid (PFDA)	0.30	J I	1.9	0.29	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorobutanesulfonic acid (PFBS)	6.6		1.9	0.19	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorohexanesulfonic acid (PFHxS)	6.4	B	1.9	0.16	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.23	J	1.9	0.18	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorooctanesulfonic acid (PFOS)	8.7		1.9	0.51	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		01/08/20 05:30	01/08/20 19:48	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		01/08/20 05:30	01/08/20 19:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		01/08/20 05:30	01/08/20 19:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.4	J	19	1.8	ng/L		01/08/20 05:30	01/08/20 19:48	1
6:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/08/20 19:48	1
8:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/08/20 19:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	52		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C5 PFPeA	58		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C2 PFHxA	80		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C4 PFHpA	83		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C4 PFOA	87		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C5 PFNA	96		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C2 PFDA	106		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C2 PFUnA	108		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C2 PFDoA	103		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C2 PFTeDA	95		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C3 PFBS	72		25 - 150	01/08/20 05:30	01/08/20 19:48	1
18O2 PFHxS	80		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C4 PFOS	83		25 - 150	01/08/20 05:30	01/08/20 19:48	1
13C8 FOSA	85		25 - 150	01/08/20 05:30	01/08/20 19:48	1
d3-NMeFOSAA	154	*	25 - 150	01/08/20 05:30	01/08/20 19:48	1
d5-NEtFOSAA	160	*	25 - 150	01/08/20 05:30	01/08/20 19:48	1
M2-6:2 FTS	290	*	25 - 150	01/08/20 05:30	01/08/20 19:48	1
M2-8:2 FTS	395	*	25 - 150	01/08/20 05:30	01/08/20 19:48	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTINE +TAL

**Client Sample ID: GM-7D**  
**Date Collected: 12/27/19 12:35**  
**Date Received: 12/31/19 08:45**

**Lab Sample ID: 320-57406-5**  
**Matrix: Water**

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	5.5		1.9	0.33	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluoropentanoic acid (PFPeA)	5.1		1.9	0.47	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorohexanoic acid (PFHxA)	5.6		1.9	0.55	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluoroheptanoic acid	7.0		1.9	0.24	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorooctanoic acid (PFOA)	29		1.9	0.81	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorononanoic acid (PFNA)	8.4		1.9	0.26	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorodecanoic acid (PFDA)	1.4	J	1.9	0.29	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorobutanesulfonic acid (PFBS)	3.9		1.9	0.19	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorohexanesulfonic acid (PFHxS)	17	B	1.9	0.16	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.1	J	1.9	0.18	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorooctanesulfonic acid (PFOS)	69		1.9	0.51	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		01/08/20 05:30	01/10/20 16:18	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		01/08/20 05:30	01/10/20 16:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		01/08/20 05:30	01/10/20 16:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		01/08/20 05:30	01/10/20 16:18	1
6:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/10/20 16:18	1
8:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/10/20 16:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	40		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C5 PFPeA	51		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C2 PFHxA	72		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C4 PFHpA	79		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C4 PFOA	81		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C5 PFNA	92		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C2 PFDA	98		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C2 PFUnA	98		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C2 PFDoA	94		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C2 PFTeDA	87		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C3 PFBS	70		25 - 150	01/08/20 05:30	01/10/20 16:18	1
18O2 PFHxS	85		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C4 PFOS	96		25 - 150	01/08/20 05:30	01/10/20 16:18	1
13C8 FOSA	85		25 - 150	01/08/20 05:30	01/10/20 16:18	1
d3-NMeFOSAA	107		25 - 150	01/08/20 05:30	01/10/20 16:18	1
d5-NEtFOSAA	113		25 - 150	01/08/20 05:30	01/10/20 16:18	1
M2-6:2 FTS	219	*	25 - 150	01/08/20 05:30	01/10/20 16:18	1
M2-8:2 FTS	188	*	25 - 150	01/08/20 05:30	01/10/20 16:18	1



# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-15D**  
 Date Collected: 12/27/19 08:45  
 Date Received: 12/31/19 08:45

**Lab Sample ID: 320-57406-6**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	34		1.9	0.33	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluoropentanoic acid (PFPeA)	27		1.9	0.47	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorohexanoic acid (PFHxA)	54		1.9	0.55	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluoroheptanoic acid	18		1.9	0.24	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorooctanoic acid (PFOA)	100		1.9	0.81	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorononanoic acid (PFNA)	93		1.9	0.26	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorodecanoic acid (PFDA)	0.82	J	1.9	0.30	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorobutanesulfonic acid (PFBS)	5.1		1.9	0.19	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorohexanesulfonic acid (PFHxS)	12	B	1.9	0.16	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.45	J I	1.9	0.18	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorooctanesulfonic acid (PFOS)	23		1.9	0.52	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/08/20 05:30	01/10/20 16:28	1
Perfluorooctanesulfonamide (FOSA)	0.33	J	1.9	0.33	ng/L		01/08/20 05:30	01/10/20 16:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		01/08/20 05:30	01/10/20 16:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	12	J	19	1.8	ng/L		01/08/20 05:30	01/10/20 16:28	1
6:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/10/20 16:28	1
8:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/10/20 16:28	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C4 PFBA	35		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C5 PFPeA	46		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C2 PFHxA	70		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C4 PFHpA	76		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C4 PFOA	81		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C5 PFNA	86		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C2 PFDA	94		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C2 PFUnA	101		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C2 PFDoA	90		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C2 PFTeDA	84		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C3 PFBS	66		25 - 150				01/08/20 05:30	01/10/20 16:28	1
18O2 PFHxS	77		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C4 PFOS	90		25 - 150				01/08/20 05:30	01/10/20 16:28	1
13C8 FOSA	80		25 - 150				01/08/20 05:30	01/10/20 16:28	1
d3-NMeFOSAA	131		25 - 150				01/08/20 05:30	01/10/20 16:28	1
d5-NEtFOSAA	151	*	25 - 150				01/08/20 05:30	01/10/20 16:28	1
M2-6:2 FTS	212	*	25 - 150				01/08/20 05:30	01/10/20 16:28	1
M2-8:2 FTS	287	*	25 - 150				01/08/20 05:30	01/10/20 16:28	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTINE +TAL

**Client Sample ID: GM-16D**

**Lab Sample ID: 320-57406-7**

Date Collected: 12/27/19 08:10

Matrix: Water

Date Received: 12/31/19 08:45

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	6.7		1.9	0.33	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluoropentanoic acid (PFPeA)	9.9		1.9	0.47	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorohexanoic acid (PFHxA)	6.5		1.9	0.55	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluoroheptanoic acid	5.5		1.9	0.24	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorooctanoic acid (PFOA)	9.0		1.9	0.81	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorononanoic acid (PFNA)	5.7		1.9	0.26	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorodecanoic acid (PFDA)	0.45	J	1.9	0.30	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J B	1.9	0.16	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorooctanesulfonic acid (PFOS)	4.0		1.9	0.52	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/08/20 05:30	01/10/20 16:38	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		01/08/20 05:30	01/10/20 16:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		01/08/20 05:30	01/10/20 16:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		01/08/20 05:30	01/10/20 16:38	1
6:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/10/20 16:38	1
8:2 FTS	ND		19	1.9	ng/L		01/08/20 05:30	01/10/20 16:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	74		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C5 PFPeA	72		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C2 PFHxA	92		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C4 PFHpA	81		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C4 PFOA	89		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C5 PFNA	106		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C2 PFDA	108		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C2 PFUnA	98		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C2 PFDoA	95		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C2 PFTeDA	88		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C3 PFBS	82		25 - 150	01/08/20 05:30	01/10/20 16:38	1
18O2 PFHxS	80		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C4 PFOS	85		25 - 150	01/08/20 05:30	01/10/20 16:38	1
13C8 FOSA	85		25 - 150	01/08/20 05:30	01/10/20 16:38	1
d3-NMeFOSAA	148		25 - 150	01/08/20 05:30	01/10/20 16:38	1
d5-NEtFOSAA	157	*	25 - 150	01/08/20 05:30	01/10/20 16:38	1
M2-6:2 FTS	240	*	25 - 150	01/08/20 05:30	01/10/20 16:38	1
M2-8:2 FTS	388	*	25 - 150	01/08/20 05:30	01/10/20 16:38	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-17D**  
**Date Collected: 12/27/19 07:30**  
**Date Received: 12/31/19 08:45**

**Lab Sample ID: 320-57406-8**  
**Matrix: Water**

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	5.7		2.0	0.35	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluoropentanoic acid (PFPeA)	7.8		2.0	0.49	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorohexanoic acid (PFHxA)	6.7		2.0	0.57	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluoroheptanoic acid	5.2		2.0	0.25	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorooctanoic acid (PFOA)	12		2.0	0.84	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorononanoic acid (PFNA)	1.6	J	2.0	0.27	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorodecanoic acid (PFDA)	0.67	J	2.0	0.31	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	2.0	0.20	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	J B	2.0	0.17	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorooctanesulfonic acid (PFOS)	5.6		2.0	0.53	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		01/08/20 05:30	01/10/20 16:48	1
Perfluorooctanesulfonamide (FOSA)	ND		2.0	0.35	ng/L		01/08/20 05:30	01/10/20 16:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		01/08/20 05:30	01/10/20 16:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEIFOSAA)	ND		20	1.9	ng/L		01/08/20 05:30	01/10/20 16:48	1
6:2 FTS	ND		20	2.0	ng/L		01/08/20 05:30	01/10/20 16:48	1
8:2 FTS	ND		20	2.0	ng/L		01/08/20 05:30	01/10/20 16:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	86		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C5 PFPeA	78		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C2 PFHxA	92		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C4 PFHpA	88		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C4 PFOA	91		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C5 PFNA	107		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C2 PFDA	107		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C2 PFUnA	117		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C2 PFDoA	106		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C2 PFTeDA	88		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C3 PFBS	89		25 - 150	01/08/20 05:30	01/10/20 16:48	1
18O2 PFHxS	90		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C4 PFOS	92		25 - 150	01/08/20 05:30	01/10/20 16:48	1
13C8 FOSA	103		25 - 150	01/08/20 05:30	01/10/20 16:48	1
d3-NMeFOSAA	161	*	25 - 150	01/08/20 05:30	01/10/20 16:48	1
d5-NEIFOSAA	178	*	25 - 150	01/08/20 05:30	01/10/20 16:48	1
M2-6:2 FTS	217	*	25 - 150	01/08/20 05:30	01/10/20 16:48	1
M2-8:2 FTS	397	*	25 - 150	01/08/20 05:30	01/10/20 16:48	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-18D**  
 Date Collected: 12/27/19 09:50  
 Date Received: 12/31/19 08:45

**Lab Sample ID: 320-57406-9**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	17		2.0	0.35	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluoropentanoic acid (PFPeA)	54		2.0	0.49	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorohexanoic acid (PFHxA)	31		2.0	0.58	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluoroheptanoic acid	18		2.0	0.25	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorooctanoic acid (PFOA)	25		2.0	0.85	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorononanoic acid (PFNA)	7.4		2.0	0.27	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorodecanoic acid (PFDA)	3.6		2.0	0.31	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluoroundecanoic acid (PFUnA)	2.4		2.0	1.1	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorobutanesulfonic acid (PFBS)	2.4		2.0	0.20	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorohexanesulfonic acid (PFHxS)	8.0	B	2.0	0.17	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.24	J	2.0	0.19	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorooctanesulfonic acid (PFOS)	25		2.0	0.54	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		01/08/20 05:30	01/10/20 16:58	1
Perfluorooctanesulfonamide (FOSA)	0.94	J	2.0	0.35	ng/L		01/08/20 05:30	01/10/20 16:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		01/08/20 05:30	01/10/20 16:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.9	J	20	1.9	ng/L		01/08/20 05:30	01/10/20 16:58	1
6:2 FTS	52		20	2.0	ng/L		01/08/20 05:30	01/10/20 16:58	1
8:2 FTS	ND		20	2.0	ng/L		01/08/20 05:30	01/10/20 16:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	73		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C5 PFPeA	72		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C2 PFHxA	89		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C4 PFHpA	91		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C4 PFOA	91		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C5 PFNA	97		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C2 PFDA	101		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C2 PFUnA	102		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C2 PFDoA	100		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C2 PFTeDA	105		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C3 PFBS	92		25 - 150	01/08/20 05:30	01/10/20 16:58	1
18O2 PFHxS	93		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C4 PFOS	104		25 - 150	01/08/20 05:30	01/10/20 16:58	1
13C8 FOSA	100		25 - 150	01/08/20 05:30	01/10/20 16:58	1
d3-NMeFOSAA	116		25 - 150	01/08/20 05:30	01/10/20 16:58	1
d5-NEtFOSAA	116		25 - 150	01/08/20 05:30	01/10/20 16:58	1
M2-6:2 FTS	167	*	25 - 150	01/08/20 05:30	01/10/20 16:58	1
M2-8:2 FTS	166	*	25 - 150	01/08/20 05:30	01/10/20 16:58	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57406-1  
 SDG: GMP WELLS PART360 ROUTNE +TAL

**Client Sample ID: GM-19D**

**Lab Sample ID: 320-57406-10**

Date Collected: 12/27/19 09:30

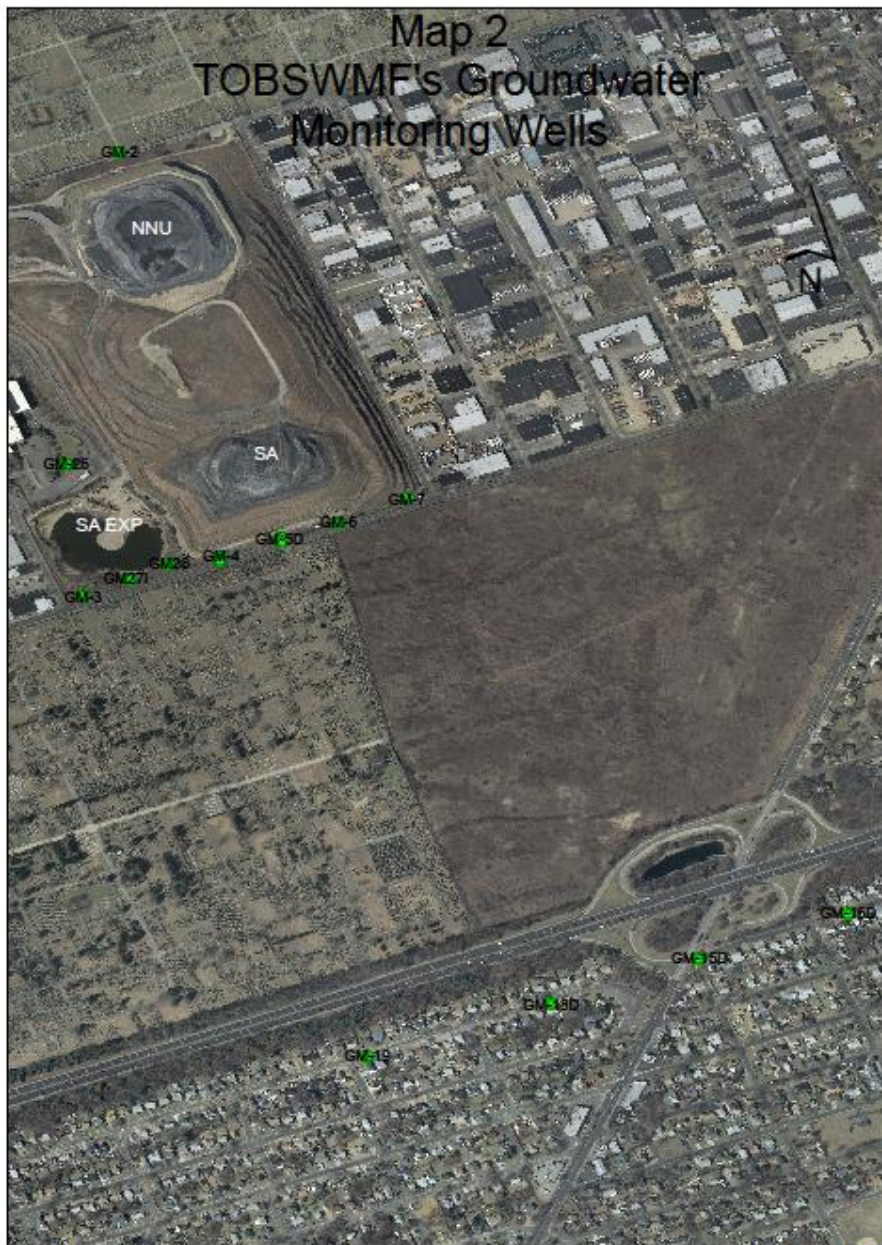
Matrix: Water

Date Received: 12/31/19 08:45

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	6.9		2.2	0.39	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluoropentanoic acid (PFPeA)	12		2.2	0.55	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorohexanoic acid (PFHxA)	15		2.2	0.65	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluoroheptanoic acid	17		2.2	0.28	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorooctanoic acid (PFOA)	120		2.2	0.95	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorononanoic acid (PFNA)	8.2		2.2	0.30	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorodecanoic acid (PFDA)	2.4		2.2	0.35	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluoroundecanoic acid (PFUnA)	ND		2.2	1.2	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorododecanoic acid (PFDoA)	ND		2.2	0.62	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorotridecanoic acid (PFTriA)	ND		2.2	1.5	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.2	0.32	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.2	0.22	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorohexanesulfonic acid (PFHxS)	5.9	B	2.2	0.19	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.1	J	2.2	0.21	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorooctanesulfonic acid (PFOS)	64		2.2	0.60	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.2	0.36	ng/L		01/08/20 05:30	01/10/20 17:08	1
Perfluorooctanesulfonamide (FOSA)	0.42	J	2.2	0.39	ng/L		01/08/20 05:30	01/10/20 17:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		22	3.5	ng/L		01/08/20 05:30	01/10/20 17:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		22	2.1	ng/L		01/08/20 05:30	01/10/20 17:08	1
6:2 FTS	ND		22	2.2	ng/L		01/08/20 05:30	01/10/20 17:08	1
8:2 FTS	ND		22	2.2	ng/L		01/08/20 05:30	01/10/20 17:08	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	85		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C5 PFPeA	77		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C2 PFHxA	87		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C4 PFHpA	86		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C4 PFOA	84		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C5 PFNA	90		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C2 PFDA	89		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C2 PFUnA	96		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C2 PFDoA	88		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C2 PFTeDA	95		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C3 PFBS	90		25 - 150				01/08/20 05:30	01/10/20 17:08	1
18O2 PFHxS	85		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C4 PFOS	90		25 - 150				01/08/20 05:30	01/10/20 17:08	1
13C8 FOSA	81		25 - 150				01/08/20 05:30	01/10/20 17:08	1
d3-NMeFOSAA	96		25 - 150				01/08/20 05:30	01/10/20 17:08	1
d5-NEtFOSAA	97		25 - 150				01/08/20 05:30	01/10/20 17:08	1
M2-6:2 FTS	96		25 - 150				01/08/20 05:30	01/10/20 17:08	1
M2-8:2 FTS	97		25 - 150				01/08/20 05:30	01/10/20 17:08	1





**Legend**

- Groundwater\_Wells

Produced by TOBDEC  
September 2009  
TOBGIS

## **Groundwater Monitoring for the Southern Ashfill Lateral Expansion (Cell 7)**

The GMP for Cell 7 follows the procedures outlined in the draft monitoring program prepared for the facility by P.W. Grosser Consulting in 2009 and the sampling procedures included in the Site Analytical Plan for the Town of Babylon Solid Waste Management Facilities (SAP) (TOBDEC, 2018). Well clusters 26, 27 and 28 were designed to provide the preoperational and operational phase groundwater data to monitor this facility. These wells were sampled from 2009 to September 2012 with the purpose of acquiring pre-operational groundwater data. Quarterly sampling for the operational phase began in December 2012. Sampling procedures for the Cell 7 facility's operational phase adheres to the 2018 TOBSWMF's SAP.

In August 2015 an addendum to the 2009 draft GMP for Cell 7 was completed by P.W. Grosser Consulting. After reviewing the Cell 7 GMP and data accrued, the addendum noted:

- The operational groundwater monitoring protocol presented in the original GMP remains a reliable means to detect a release of leachate at Cell 7.
- Groundwater downgradient of the Cell 7 facility has been highly variable due to Lake Wyandanch's pre-existing use for stormwater impoundment and other historical land uses upgradient of the Cell 7 facility that will continue to influence the groundwater quality of the area.
- The pre-existing influences do not preclude the ability to identify a leachate release.
- STV's calculated for an individual well from its own data will vary with the variability present in groundwater quality between the wells.
- Continued breaching of individual STV's should be expected and only a downgradient well sample where all leachate indicators exceed their STV might indicate a leachate release.
- STV's should be reviewed in conjunction with Piper plots as criteria to trigger contingency actions.
- A single STV equal to the highest STV calculated at the downgradient wells be established for each indicator.
- Utilization of a Piper diagram demonstrates unique geochemical fingerprints for leachate, groundwater and stormwater.
- The final list of leachate indicators are chloride, hardness, calcium, potassium and sodium. TKN and ammonia are not considered reliable since their concentration are not as significantly different from leachate and there was a prior source (Lake Wyandanch) which may be contributing to ongoing residual influence on operational data. Either TKN or ammonia should continue to be monitored for continuity. Manganese should be eliminated as an indicator due to its concentration in groundwater and leachate being similar and the presence of anomalous spikes.
- Groundwater sampling for Cell 7 may proceed if precipitation of no greater than 0.25 inch has been recorded within the preceding week.

The 2015 addendum to the GMP provided the following means to identify if a leachate release may have occurred and the appropriate response:

1. A leak in the liner system may have occurred only if all five indicators exceed their STV's at a downgradient monitoring point.
2. The first time chloride is observed an order of magnitude above its STV (and no additional indicators exceed their STV), the next quarterly results must be closely reviewed for a repeat of this observance or any additional indicator exceeding their STV at that monitoring point.
3. The first time chloride and two additional indicators are observed exceeding their STV in a single well, that well will be re-sampled prior to the next quarterly results to confirm the STV exceedances at that monitoring point.
4. A first time occurrence where all leachate indicators exceed their STV at a single well indicates a potential leak in the liner. TOBDEC will:
  - a. Consult with the lab to confirm the results.
  - b. Plot the data on a Piper diagram to see if it falls within the highlighted area described as the leachate/groundwater mix zone within the GMP addendum.
  - c. Notify NYSDEC.
5. Should all leachate indicators exceed their STV at a single well and the Piper data plots fall within the leachate/groundwater mix zone, TOBDEC will consult with NYSDEC on the appropriate course of action.

Pursuant to requirements set forth by NYSDEC (Groundwater Sampling for Emerging Contaminants, 2018), analysis for the Cell 7 GMP was expanded to include analysis for 1,4 dioxane and PFAS/PFOA's beginning in March 2018.

### **Data-GMP for Cell 7**

As noted in the introduction, sampling for the Cell 7 GMP was performed in September and December 2019. The laboratory reports prepared by Pace Analytical Services Inc. have been included as appendix 1.

Monitoring for the operational phase of Cell 7 focuses on:

1. Comparison of upgradient and downgradient groundwater data with emphasis on select leachate indicators.
2. Preparation of Piper diagrams for stormwater, groundwater and leachate. Determine if there is a change to the geochemical fingerprint of groundwater downgradient of Cell 7 whereby it falls within the highlighted area described as the leachate/groundwater mix zone.
3. Monitor downgradient groundwater wells and compare data to existing water quality and STV's with objective of identifying a significant increase from existing water quality values.
4. Sampling stormwater from the facility's stormwater system (former USDS) to monitor for changes in stormwater quality.

As detailed in 6NYCRR part 363, the existing water quality for each monitoring point was calculated as the arithmetic mean of the pre-operational groundwater dataset for each



relevant parameter. The Statistical Trigger Value (STV) for each parameter was calculated to be the existing water quality plus three standard deviations. A list of indicator compounds that are unique to leachate was finalized in the 2015 Addendum to the Grosser GMP. The addendum also noted that the relevant STV for each indicator compound at the downgradient monitoring points would be the highest STV calculated from these monitoring points. Stormwater data from the facility has been accrued to address the NYSDEC concern that stormwater from the USDS may cloud program results during meteorological conditions where the USDS may impact groundwater in the vicinity of the monitoring wells downgradient of Cell 7. Stormwater data was plotted on a Piper diagram (figure 15) along with groundwater and leachate data to illustrate the geochemical fingerprint of each (figure 1). As an added precaution the Addendum to the Grosser GMP includes a requirement that the Cell 7 groundwater wells not be sampled if precipitation exceeds 0.25 inch during the prior week. The following spreadsheets provide preoperational data, operational data, baseline or existing water quality values and STV's for each well cluster utilized to monitor Cell 7.

26_Baseline Data			June_09	Aug_09	Sept_09	Dec_09	June_10	Sept_10	Dec_2010	March_2011	June_11	SEPT_11	DEC_11	Mar_12	Jun_12	Sept_12	Mean(M)	stan dev(sd)	M+(3sd)	
CAS	Analyte	Units																		
	Well_Depth	feet	29.05	29.05	29.05	29.05														
	Chloride	mg_l	72	104	103	88.5	110	54	60	49	73	64	110	53	76	96	79.4642857	22.15371499	145.925431	
	TKN	mg_l	0.45	0.03	0.439	0.4	1.4	0.8	1	0.6	0.6	0.6	0.4	0.6	7.8	<.1	1.163	1.966423558	7.06227067	
	Alkalinity	mg_l	162	161	217	196	230	150	120	130	110	120	110	110	100	96	143.714286	43.96926999	275.622096	
	TDS	mg_l	491	486	585	484	690		310	320	430	330	360	340	370	399	430.384615	113.8189633	771.841505	
	Spec_Cond	umhos_cm	775	775		1410	1500	590	490	560	580	550	710	490	520	551	730.846154	335.966478	1738.74559	
	pH		7.4	5.8		7.76	6.4	6.87	6.7	6.81	6.64	6.9	7.01	6.7f/7.1lab	6/6.7	6.09			0	
	Ammonia as N	ppm	<.01	<0.0500	0.09	0.05	<.2	<.2	<.2	<.2	<.02	0.2	<.2	<.2	<0.2	<.1	0.11343333	0.057098006	0.28472735	
	Bromide	ppm	1.21	9.99	4	2	0.85	1.3	6	0.55	<.5	0.65	1.2	<.5	<0.5	0.67	2.58363636	2.836547197	11.093278	
	COD	ppm	10.7	<10.0	<10	10	<40	70	90	<40	<40	<40	50	<40	70	12	44.6714286	32.55068491	142.323483	
	Chloride	ppm	72	104	103	88.5	110	54	60	49	73	64	110	53	76	96	79.4642857	22.15371499	145.925431	
	Hardness	ppm	235	169	208	176	440	190	180	170	180	170	220	160	92	330	208.571429	84.42631224	461.850365	
	Mercury	ppm	<.0002	<0.000200		0.0002	0.0011	<.00025			<.0003					<.0001	0.00065	0.000409994	0.00187998	
	Nitrate	ppm	5.34	4.82	5	4.36	3.5	4.2	3.7	4.4	4.3	4.6	4.7	4.7	2	4.19	4.27214286	0.811780366	6.70748396	
	Sulfate	ppm	76.3	67.8	87.1	78	170	56	48	42	43	38	54	22	33	49	61.7285714	36.19403752	170.310684	
	Aluminum	ppm	3.38	0.916			<b>50</b>	<b>9.3</b>			<b>0.25</b>					<b>1.84</b>	10.9476667	19.40666444	69.16766	
	Antimony	ppm	<.06	<0.0250			<.025	<.005			<.025					0.0018	0.0018	0.000734847	0.00400454	
	Arsenic	ppm	<.01	<0.0250			0.042	0.007			<.025					<0015	0.0245	0.016809719	0.07492916	
	Barium	ppm	<.2	0.162			0.65	0.18			0.074					0.095	0.2322	0.232805283	0.93061585	
	Beryllium	ppm	<.005	<.02			<.005	<.001			<.005					<0.00012	#DIV/0!	0	#DIV/0!	
	Boron															0.0791	0.0791	#DIV/0!	#DIV/0!	
	Cadmium	ppm	<.005	<0.0100	<.01	0.01	<.025	<.005	<.005	<.005	<.025	<.005	<.005	<.005	<0.025	<0.000087	0.01	0.002672612	0.01801784	
	Calcium	ppm	77.9	59.8	73.1	61.3	150	66	66	60	67	62	79	55	28	65.6	69.3357143	26.22378859	148.00708	
	Chromium	ppm	<.01	0.00821J			0.079	0.089			<.025					0.0052	0.05773333	0.042870347	0.18634437	
	Chromium Hex															<.02	#DIV/0!	#DIV/0!	#DIV/0!	
	Cobalt	ppm	<.05	<0.0200			0.043	0.01			<.025					0.0015	0.01816667	0.017065804	0.06936408	
	Copper	ppm	<.025	0.0106J			0.29	0.05			<.05					0.0129	0.11763333	0.114899964	0.46233322	
	Iron	ppm	5.23	1.7	2.61	0.83	<b>88</b>	<b>16</b>	2.8	0.62	0.52	0.53	1.3	7.2	26	3.07	11.1721429	23.2677387	80.975359	
	Lead	ppm	0.0386	0.0139J	0.02	0.00987	0.67	0.13	<b>0.024</b>	<b>0.006</b>	<.025	<b>0.006</b>	<b>0.014</b>	<b>0.056</b>	0.22	0.0338	0.10231417	0.1783724	0.63743137	
	Magnesium	ppm	7.67	4.69	6.2	5.47	<b>18</b>	5.8	4.8	3.8	4.5	4	5.8	4.5	5.8	5.22	6.16071429	3.551518558	16.81527	
	Manganese	ppm	0.299	0.0538	0.0609	0.0269	<b>1.6</b>	0.3	0.08	0.02	<.05	0.01	0.03	0.15	0.51	0.0619	0.24634615	0.42138851	1.51051168	
	Nickel	ppm	<.04	0.00530J			0.06	0.05			<.05					0.0033	0.03776667	0.028183003	0.12231568	
	Potassium	ppm	50.1	42.6	53.3	31.6	61	28	27	24	24	25	29	21	17	18	32.2571429	13.87552989	73.8837325	
	Selenium	ppm	<.05	<0.0250			<.05	<.01			<.05					0.0045	0.0045	0.001837117	0.01001135	
	Silver	ppm	<.01	<0.0200			<.025	<.005			<.025					<0.00029	#DIV/0!	0	#DIV/0!	
	Sodium	ppm	52.2	17.6	16.3	18	75	24	27	26	29	25	33	24	23	34	30.2928571	15.68705808	77.3540314	
	Thallium	ppm	<.01	<0.0150			<.025	<.005			<.025					<.0029	#DIV/0!	0	#DIV/0!	
	Vanadium	ppm	<.05	<0.0200			0.068	0.013			<.025					0.0027	0.0279	0.026954313	0.10876294	
	Zinc	ppm	0.0916	0.077			0.81	0.2			<.05					0.0353	0.24278	0.305310808	1.15871242	
	TDS	ppm	491	486	585	484	690		310	320	430		360			399	455.5	118.9100968	812.23029	
	BOD	ppm	<2	<2	<2	2.0	<10			<2	<2	<2	<2	<.2	16	<2	9	4.60237093	22.8071128	
	TOC	ppm	2.7	2.8	4.8	3.9	5.4	1.2	<.5	<.5	<.5	0.83	0.54	<.5		2.3	2.71888889	1.918993459	8.47586927	
	Phenolics	ppm	<.005	0.0603	<.01	0.0318	0.01	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.005	0.03403333	0.017547144	0.08667476	
	TKN	ppm	0.45	.03J	0.44	0.4	1.4	0.8	1	0.6	0.6		0.4		7.8	<.1	1.389	2.12770523	7.77211569	
	DO												2.8	2.4	1.4	1.1	1.34	1.808	0.74519796	4.04359388
	Eh/ORP											200	140	-2	150	161	129.8	77.11160743	361.134822	
	1,1 Dichloroethane	ug/L					<1				<1					<5				
	1,1 Dichloroethene	ug/L					<1				<1					<5				
	1,2 Dibromoethane	ug/L					<1				<1					<5				
	1,2 Dichlorobenzene (v)	ug/L					<1				<1					<5				
	1,2 Dichloroethane	ug/L					<1				<1					<5				
	1,2 Dichloropropane	ug/L					<1				<1					<5				
	1,4 Dichlorobenzene (v)	ug/L					<1				<1					<5				

	111 Trichloroethane	ug/L	<1	<1	5
	1112Tetrachloroethane	ug/L	<1	<1	5
	112 Trichloroethane	ug/L	<1	<1	5
	1122Tetrachloroethane	ug/L	<1	<1	5
	123-Trichloropropane	ug/L	<1	<1	5
	2-Hexanone	ug/L	<10	<10	5
	Acetone	ug/L	<10	<10	5
	Acrylonitrile	ug/L	5	5	5
	Benzene	ug/L	<1	<1	5
	Bromochloromethane	ug/L	<1	<1	5
	Bromodichloromethane	ug/L	<1	<1	5
	Bromoform	ug/L	<1	<1	5
	Bromomethane	ug/L	<1	<1	5
	c-1,2-Dichloroethene	ug/L	<1	2	5
	c-1,3Dichloropropene	ug/L	<1	<1	5
	Carbon disulfide	ug/L	<1	<1	5
	Carbon Tetrachloride	ug/L	<1	<1	5
	Chlorobenzene	ug/L	<1	<1	5
124-48-1	Chlorodibromomethane	ug/L	<1	<1	5
	Chloroethane	ug/L	<1	<1	5
	Chloroform	ug/L	<1	<1	5
	Chloromethane	ug/L	<1	<1	5
96-12-8	Dibromochloropropane	ug/L	<1	<1	5
	Dibromomethane	ug/L	<1	<1	5
	Ethyl Benzene	ug/L	<1	<1	5
	m + p Xylene	ug/L	<2	<2	5
78-93-3	Methyl Ethyl Ketone	ug/L	<10	<10	5
	Methylene Chloride	ug/L	<1	<1	5
108-10-1	Methylisobutylketone	ug/L	<10	<10	5
	o Xylene	ug/L	<1	<1	5
	Styrene	ug/L	<1	<1	5
	t-1,2-Dichloroethene	ug/L	<1	<1	5
	t-1,3Dichloropropene	ug/L	<1	<1	5
	t-1,4-Dichloro-2-butene	ug/L	<1	<1	5
	Tetrachloroethene	ug/L	<1	2	5
	Toluene	ug/L	<1	<1	5
	Trichloroethene	ug/L	<1	<1	5
	Trichlorofluoromethane	ug/L	<1	<1	5
	Vinyl Acetate	ug/L	<1	<10	5
	Vinyl Chloride	ug/L	<1	<1	5
74-88-4	Iodomethane	ug/l			5
1634-04-4	propane2methoxy2methyl	ug/l			5
13330-20-7	Xylene (total)	ug/l			5
57-12-5	Cyanide	mg/l			<10



	1112Tetrachloroethane	ug/L	<1	<1	<5
	112 Trichloroethane	ug/L	<1	<1	<5
	1122Tetrachloroethane	ug/L	<1	<1	<5
	123-Trichloropropane	ug/L	<1	<1	<5
	2-Hexanone	ug/L	<10	<10	<5
	Acetone	ug/L	<10	<10	<5
	Acrylonitrile	ug/L	<5	<5	<5
	Benzene	ug/L	<1	<1	<5
	Bromochloromethane	ug/L	<1	<1	<5
	Bromodichloromethane	ug/L	<1	<1	<5
	Bromoform	ug/L	<1	<1	<5
	Bromomethane	ug/L	<1	<1	<5
	c-1,2-Dichloroethene	ug/L	<1	1	<5
	c-1,3Dichloropropene	ug/L	<1	<1	<5
	Carbon disulfide	ug/L	<1	<1	<5
	Carbon Tetrachloride	ug/L	<1	<1	<5
	Chlorobenzene	ug/L	<1	<1	<5
124-48-1	Chlorodibromomethane	ug/L	<1	<1	<5
	Chloroethane	ug/L	<1	<1	<5
	Chloroform	ug/L	<1	<1	<5
	Chloromethane	ug/L	<1	<1	<5
96-12-8	Dibromochloropropane	ug/L	<1	<1	<5
	Dibromomethane	ug/L	<1	<1	<5
	Ethyl Benzene	ug/L	<1	<1	<5
	m + p Xylene	ug/L	<2	<2	<5
78-93-3	Methyl Ethyl Ketone	ug/L	<10	<10	<5
	Methylene Chloride	ug/L	<1	<1	<5
108-10-1	Methylisobutylketone	ug/L	<10	<10	<5
	o Xylene	ug/L	<1	<1	<5
	Styrene	ug/L	<1	<1	<5
	t-1,2-Dichloroethene	ug/L	<1	<1	<5
	t-1,3Dichloropropene	ug/L	<1	<1	<5
	t-1,4-Dichloro-2-butene	ug/L	<1	<1	<5
	Tetrachloroethene	ug/L	3	1	<5
	Toluene	ug/L	<1	<1	<5
	Trichloroethene	ug/L	<1	<1	<5
	Trichlorofluoromethane	ug/L	<1	<1	<5
	Vinyl Acetate	ug/L	<1	<10	<5
	Vinyl Chloride	ug/L	<1	<1	<5
74-88-4	Iodomethane	ug/L			<5
1634-04-4	propane2methoxy2methyl	ug/L			<5
13330-20-7	Xylene (total)	ug/L			<5
57-12-5	Cyanide	ug/l			<10

CAS		GM27 baseline																Mean(M)	stan dev(sd)	M+(3sd)
Analyte	Units	June_09	Aug_09	Sept_09	Dec_09	Jun_10	Sept_10	Dec_10	Mar_11	Jun_11	Sept_11	DEC_11	Mar_12	Mar_12DUP	Jun_12	Sept_12				
Well_Depth	feet	37.12	37.12	37.12	37.12															
Chloride	mg_l	106	156	116	87	990	1100	360	260	340	300	350	250	250	180	229	338.266667	300.6508337	1240.21917	
TKN	mg_l	9.53	11.5	7.34	4.62	15	14	9	7.2	6.4	6.2	11	7	7.4	6.6	8.15	8.72933333	2.967135383	17.6307395	
Alkalinity	mg_l	189	215	186	150	260	170	190	210	240	250	300	280	270	260	256	228.4	44.54500132	362.035004	
Spec_Cond	umhos_cm	750	900		849	630	2400	1100	1100	1700	1400	1800	1300		1400	961	1253.07692	493.3811004	2733.22022	
pH		10.2	7		9.97	7.17	7.32	8.1	7.36	7.83	7.9	6.89	7.9lab/7.3f		7.55	7.55			0	
Ammonia as N	ppm	6.11	9.96	6.3	4.44	13	11	7.2	5.4	6	6.2	10	6	6.6	5.4	5.3	7.26066667	2.498972551	14.7575843	
Bromide	ppm	0.61	<2	8.66	2	0.75	<.5	6.3	0.91	<.5	0.8	1.3	<.5	<.5	<.5	0.83	2.46222222	2.545717599	10.099375	
COD	ppm	125	59	66.8	37.2	80	450	60	220	90	120	150	100	100	220	85.6	130.906667	103.3479246	440.950441	
Chloride	ppm	106	156	116	87	990	1100	360	260	340	300	350	250	250	180	229	338.266667	300.6508337	1240.21917	
Hardness	ppm	275	172	150	114	600	590	360	340	280	290	370	280	270	320	268	311.933333	136.1178411	720.286857	
Mercury	ppm	<.0002	<.0002		0.0002	<.001	<.00025			<.0003						<.0001	0.0002	7.55929E-05	0.00042678	
Nitrate	ppm	0.11	<.1	<.1	0.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	0.105	0.036994208	0.21598262	
Sulfate	ppm	30.9	3.1	<2	5.02	5	8	<5	<.5	<5	<5	<5	5	<5	1.6	<5	8.37428571	7.915145699	32.1197228	
Aluminum	ppm	7.58	6.74			27	29			0.33							0.597	11.8745	12.863334	50.464502
Antimony	ppm	<.06	<.025			<.025	<.005			<.025						<.0018	#DIV/0!	0	#DIV/0!	
Arsenic	ppm	<.01	<.025			<.025	0.01			<.025						0.0015	0.00575	0.004005205	0.01776561	
Barium	ppm	<.2	0.185			0.9	0.66			0.086						0.213	0.4088	0.356726039	1.47897812	
Beryllium	ppm	<.005	<.02			<.005	0.001			<.005						<.00012	0.001	0.000408248	0.00222474	
Boron																	0.164			
Cadmium	ppm	<.005	<.01	<.01	0.01	<.025	<.005	<.005	<.005	<.025	<.005	<.005	<.005	<.005	<.025	<.000087	0.01	0.002581989	0.01774597	
Calcium	ppm	92.1	62.6	53.2	42.1	190	190	120	120	98	97	120	90	89	100	88.5	103.5	41.90663091	229.219893	
Chromium	ppm	0.0165	0.025			0.06	0.073			<.025							0.0175	0.0384	0.028243583	0.12313075
Chromium Hex																<.02				
Cobalt	ppm	<.05	<.02			<.025	0.017			<.025							0.0003	0.00865	0.006916767	0.0294003
Copper	ppm	<.025	0.0231			0.08	0.1			<.05							0.0033	0.0516	0.044371928	0.18471578
Iron	ppm	8.31	8.97	6.23	0.774	37	40	5.6	20	1.6	2.4	7.5	3.4	3.4	37	3.52	12.3802667	14.03898738	54.4972288	
Lead	ppm	0.0727	0.0817	0.048	0.00678	0.28	0.31	0.029	0.14	<.025	<.005	0.021	0.009	0.007	0.14	0.0151	0.08925231	0.099964344	0.38914534	
Magnesium	ppm	<5	3.94	4.21	2.06	31	26	16	12	9.9	12	18	12	12	14	11.2	13.165	8.389035758	38.3321073	
Manganese	ppm	0.0994	0.127	0.087	0.0137	0.52	0.52	0.16	0.31	0.13	0.13	0.19	0.14	0.14	0.57	0.139	0.21840667	0.176081347	0.74665071	
Nickel	ppm	<.04	0.0153J			<.05	0.04			<.05						0.0121	0.02605	0.016087314	0.07431194	
Potassium	ppm	12.5	13.8	17.9	19.9	44	51	33	26	30	33	42	32	63	26	24.7	31.2533333	14.41052919	74.4849209	
Selenium	ppm	<.005	<.025			<.05	<.01			<.05						<.0021	#DIV/0!	0	#DIV/0!	
Silver	ppm	<.01	<.02			<.025	<.005			<.025						<.00029	#DIV/0!	0	#DIV/0!	
Sodium	ppm	42.7	23.9	16.1	19.9	310	240	130	110	100	120	170	110	110	97	107	113.773333	80.1525997	354.231132	
Thallium	ppm	<.01	<.015			<.025	<.005			<.025						<.0029	#DIV/0!	0	#DIV/0!	
Vanadium	ppm	<.05	<.02			0.06	0.072			<.025							0.0022	0.04473333	0.034021268	0.14679714
Zinc	ppm	0.106	0.141			0.52	0.55			<.05							0.0125	0.2659	0.248828539	1.01238562
TDS	ppm	420	460	364	321	2000		820	840	950	680	840	800	730	630	660	751.071429	409.4950858	1979.55669	
BOD	ppm	4	11	17	21	44			14	31	<43	26	36	40	110	23	31.4166667	27.73084925	114.609214	
TOC	ppm	18.5	34	26	15	34	22	19	19	24	18	24	22	22	24	24.3	23.0533333	5.344538824	39.0869498	
Phenolics	ppm	0.0066	0.113	0.0692	0.0226	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.002	<.005	0.05285	0.032877076	0.15148123	
TKN	ppm	9.53	11.5	7.34	4.62	15	14	9	7.2	6.4		11			6.6	8.15	9.29	3.1550407	18.7551221	
DO																				
Eh/ORP																				
1,1 Dichloroeth:	ug/L					<1				<1						<5				
1,1 Dichloroeth:	ug/L					<1				<1						<5				
1,2 Dibromoeth	ug/L					<1				<1						<5				
1,2 Dichloroben	ug/L					<1				<1						<5				
1,2 Dichloroeth:	ug/L					<1				<1						<5				
1,2 Dichloropro	ug/L					<1				<1						<5				
1,4 Dichloroben	ug/L					<1				<1						<5				
111 Trichloroetl	ug/L					<1				<1						<5				

1112Tetrachloro	ug/L	<1	<1	<5
112 Trichloroeth	ug/L	<1	<1	<5
1122Tetrachloro	ug/L	<1	<1	<5
123-Trichloropr	ug/L	<1	<1	<5
2-Hexanone	ug/L	<10	<10	<5
Acetone	ug/L	<10	<10	<5
Acrylonitrile	ug/L	<5	<5	<5
Benzene	ug/L	<1	<1	<5
Bromochlorome	ug/L	<1	<1	<5
Bromodichloron	ug/L	<1	<1	<5
Bromoform	ug/L	<1	<1	<5
Bromomethane	ug/L	<1	<1	<5
c-1,2-Dichloroe	ug/L	<1	<1	<5
c-1,3Dichloropr	ug/L	<1	<1	<5
Carbon disulfide	ug/L	<1	<1	<5
Carbon Tetrach	ug/L	<1	<1	<5
Chlorobenzene	ug/L	<1	<1	<5
124-48-1 Chlorodibromor	ug/L	<1	<1	<5
Chloroethane	ug/L	<1	<1	<5
Chloroform	ug/L	<1	<1	<5
Chloromethane	ug/L	<1	<1	<5
96-12-8 Dibromochlorop	ug/L	<1	<1	<5
Dibromomethar	ug/L	<1	<1	<5
Ethyl Benzene	ug/L	<1	<1	<5
m + p Xylene	ug/L	<2	<2	<5
78-93-3 Methyl Ethyl Ke	ug/L	<10	<10	<5
Methylene Chlo	ug/L	<1	<1	<5
108-10-1 Methylisobutylk	ug/L	<10	<10	<5
o Xylene	ug/L	<1	<1	<5
Styrene	ug/L	<1	<1	<5
t-1,2-Dichloroet	ug/L	<1	<1	<5
t-1,3Dichloroprc	ug/L	<1	<1	<5
t-1,4-Dichloro-2	ug/L	<1	<1	<5
Tetrachloroethe	ug/L	<1	<1	<5
Toluene	ug/L	<1	<1	<5
Trichloroethene	ug/L	<1	<1	<5
Trichlorofluoron	ug/L	<1	<1	<5
Vinyl Acetate	ug/L	<1	<10	<5
Vinyl Chloride	ug/L	<1	<1	<5
74-88-4 Iodomethane	ug/L			<5
1634-04-4 ane2methoxy2m	ug/L			<5
13330-20-7 Xylene (total)	ug/L			<5
57-12-5 Cyanide	ug/L			<10

CAS	GM27I Baseline	Units	June_09	Aug_09	Sept_09	Dec_09	Jun_10	Sept_10	Dec_10	Mar_11	Jun_11	Jun11_DUP	Sept_11	DEC_11	Mar_12	Jun_12	Sept_12	Sept12_Dup	Mean(M)	stan dev(sd)	
	Analyte																				
	Well_Depth	feet	47.99	47.99		47.99															
	Chloride	mg_l	105	126	112	104	150	220	250	200	310	320	310	270	260	260	208	197	213.666667	77.83835509	
	TKN	mg_l	4.33	4.63	4.54	4.06	4.2	5.4	6.2	4.8	6.2	6.4	6.4	7	7.4	7.4	7.58	15.6	5.76933333	1.271087648	
	Alkalinity	mg_l	111	206	197	225	190	210	220	200	230	240	230	240	230	230	187	195	209.733333	33.03286742	
	Spec_Cond	umhos_cm	515	700		501	2300	950	940	880	1600		1500	1300	1300	1500	795		1137	510.126945	
	pH		9.7	6.8		9.91	7.23	7.62	8.1	7.82	7.64	7.8	7.9	6.94	8lab/8.21f	7.66	8.22				
	Ammonia as N	ppm	2.66	3.44	3.78	3.52	3.2	4.4	5	3.6	5.6	5.8	5.4	6.2	6.4	6.4	4.78		4.67866667	1.258331473	
	Bromide	ppm	0.74	<2	5.99	2	<.5	<.5	6.4	1.1	<.5	<.5	1.2	1.4	<.5	1.5	1.1	1.11	2.38111111	2.050111031	
	COD	ppm	42.5	22.8	12.9	27.3	<40	110	50	50	80	130	110	100	130	190	68	55.1	80.25	52.9228819	
	Chloride	ppm	105	126	112	104	150	220	250	200	310	320	310	270	260	260	208	197	213.666667	77.83835509	
	Hardness	ppm	180	175	189	187	200	480	350	270	340	340	360	320	310	350	360	256	294.066667	90.15341422	
	Mercury	ppm	<.0002	<.0002		0.0002	<.00025	<.00025			<.0003	<.0003					<.0001		0.0002	7.07107E-05	
	Nitrate	ppm	<.1	<.1	<.1	0.1	<.5	<.5	<.5	<5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	<.1	0.1	0.025819889	
	Sulfate	ppm	21.6	5.19	<2	2	7	5.5	<5	5	<5	<5	<5	<5	8	7	<5	<5	7.66125	5.758938146	
	Aluminum	ppm	1.3	0.621			0.34	3.8			0.2	0.22					0.26	0.398	0.963	1.309940075	
	Antimony	ppm	<.06	<.025			<.025	<.005			<.025	<.025					<.0018	<.0018	#DIV/0!	0	
	Arsenic	ppm	<.01	<.025			<.025	<.005			<.025	<.025					0.0031	<.0015	0.0031	0.00117169	
	Barium	ppm	<.2	0.106			0.051	0.1			0.086	0.089					0.0571	0.0603	0.08151667	0.037059174	
	Beryllium	ppm	<.005	<.02			<.005	<.001			<.005	<.005					<.00012	<.00012	#DIV/0!	0	
	Boron																0.15	0.172			
	Cadmium	ppm	<.005	<.01	<.01	0.01	<.025	<.005	<.005	<.005	<.025	<.025	<.005	<.005	<.005	<.025	<.000087	<.000087	0.01	0.002581989	
	Calcium	ppm	65.8	62.4	67.7	66.1	71	180	120	95	120	120	120	110	110	120	80	83.8	100.533333	32.33489196	
	Chromium	ppm	<.01	0.00649J			<.025	0.007			<.025	<.025					0.0054	0.0053	0.0062	0.003060345	
	Chromium hex																<.02	<.02			
	Cobalt	ppm	<.05	<.02			<.025	<.005			<.025	<.025					<.00028	<.00028	#DIV/0!	0	
	Copper	ppm	<.025	0.0122J			<.05	<.01			<.025	<.025					0.0022	<.002	0.0022	0.000831522	
	Iron	ppm	1.31	1.25	1.91	1.29	0.7	9.9	2.9	1.7	2.5	2.6	2.4	2.3	4.7	3.4	1.21	1.27	2.67133333	2.244430779	
	Lead	ppm	0.0133	0.00998J	0.0107	0.00711	<.025	0.038	0.01	0.008	<.025	<.025	<.005	<.005	0.023	<.025	0.0092	0.0099	0.01491375	0.010739049	
	Magnesium	ppm	<5	4.66	4.88	5.3	5.9	8.1	11	7.7	10	11	11	9.8	11	13	7.17	7.63	8.60785714	3.439285225	
	Manganese	ppm	0.0533	0.0949	0.111	0.0808	0.07	0.31	0.16	0.12	0.16	0.16	0.16	0.15	0.21	0.18	0.0975	0.101	0.14116667	0.064410721	
	Nickel	ppm	<.04	<.02			<.05	<.01			<.05	<.05					0.0038	0.0034	0.0038	0.001436265	
	Potassium	ppm	18.8	15	18.9	15.4	22	28	27	25	32	33	31	34	34	34	23.9	24.5	26.1333333	6.885561152	
	Selenium	ppm	<.005	<.025			<.05	<.01			<.05	<.05					<.0021	<.0021	#DIV/0!	0	
	Silver	ppm	<.01	<.02			<.025	<.005			<.025	<.025					<.00029	<.00029	#DIV/0!	0	
	Sodium	ppm	52.3	19.2	15.1	20.2	54	70	74	62	32	100	110	110	95	120	77.8	80.2	67.44	35.20908568	
	Thallium	ppm	<.01	<.015			<.025	<.005			<.025	<.025					<.0029	<.0029	#DIV/0!	0	
	Vanadium	ppm	<.05	<.02			<.025	0.008			<.025	<.025					0.0009	0.0011	0.00445	0.002985919	
	Zinc	ppm	0.0255	0.0715			0.05	0.12			<.05	<.05					0.0223	0.0054	0.05786	0.043211562	
	TDS	ppm	341	460	442	417	450		640	530	860	1000	970	580	490	780	602	563	611.571429	211.5262174	
	BOD	ppm	<2	3.9	37	35	<3			10	33	46	>44	27	43	26	21	24	28.19	17.06926312	
	TOC	ppm	12.8	14	14	18	13	11	15	15	19	22	21	16	21	27	18.7	18.2	17.1666667	4.318674841	
	Phenolics	ppm	<.005	0.0785	0.0718	0.0261	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.005	<.005	0.0588	0.026624688	
	TKN	ppm	4.33	4.63	4.54	4.06	4.2	5.4	6.2	4.8	6.2	6.4		7	7.4	7.4	7.58	15.6	5.72428571	1.306585181	
	DO													0.06	0.59	0.33	0.4	0.07	0.29	0.226384628	
	Eh/ORP													-200	-200	-200	-200	-243.6			
	1,1 Dichloroethane	ug/L					<1				<1	<1					<5	<5			
	1,1 Dichloroethene	ug/L					<1				<1	<1					<5	<5			
	1,2 Dibromoethane	ug/L					<1				<1	<1					<5	<5			
	1,2 Dichlorobenzene (v	ug/L					<1				<1	<1					<5	<5			
	1,2 Dichloroethane	ug/L					<1				<1	<1					<5	<5			
	1,2 Dichloropropane	ug/L					<1				<1	<1					<5	<5			
	1,4 Dichlorobenzene (v	ug/L					<1				<1	<1					<5	<5			
	111 Trichloroethane	ug/L					<1				<1	<1					<5	<5			



1112	Tetrachloroethane	ug/L	<1	<1	<1	<5	<5
112	Trichloroethane	ug/L	<1	<1	<1	<5	<5
1122	Tetrachloroethane	ug/L	<1	<1	<1	<5	<5
123	Trichloropropane	ug/L	<1	<1	<1	<5	<5
	2-Hexanone	ug/L	<10	<10	<10	<5	<5
	Acetone	ug/L	<10	<10	<10	<5	<5
	Acrylonitrile	ug/L	<5	<5	<5	<5	<5
	Benzene	ug/L	<1	<1	<1	<5	<5
	Bromochloromethane	ug/L	<1	<1	<1	<5	<5
	Bromodichloromethane	ug/L	<1	<1	<1	<5	<5
	Bromoform	ug/L	<1	<1	<1	<5	<5
	Bromomethane	ug/L	<1	<1	<1	<5	<5
	c-1,2-Dichloroethene	ug/L	<1	<1	<1	<5	<5
	c-1,3Dichloropropene	ug/L	<1	<1	<1	<5	<5
	Carbon disulfide	ug/L	<1	<1	<1	<5	<5
	Carbon Tetrachloride	ug/L	<1	<1	<1	<5	<5
	Chlorobenzene	ug/L	<1	<1	<1	<5	<5
124-48-1	Chlorodibromomethane	ug/L	<1	<1	<1	<5	<5
	Chloroethane	ug/L	<1	<1	<1	<5	<5
	Chloroform	ug/L	<1	<1	<1	<5	<5
	Chloromethane	ug/L	<1	<1	<1	<5	<5
96-12-8	Dibromochloropropane	ug/L	<1	<1	<1	<5	<5
	Dibromomethane	ug/L	<1	<1	<1	<5	<5
	Ethyl Benzene	ug/L	<1	<1	<1	<5	<5
	m + p Xylene	ug/L	<2	<2	<2	<5	<5
78-93-3	Methyl Ethyl Ketone	ug/L	<10	<10	<10	<5	<5
	Methylene Chloride	ug/L	<1	<1	<1	<5	<5
108-10-1	Methylisobutylketone	ug/L	<10	<10	<10	<5	<5
	o Xylene	ug/L	<1	<1	<1	<5	<5
	Styrene	ug/L	<1	<1	<1	<5	<5
	t-1,2-Dichloroethene	ug/L	<1	<1	<1	<5	<5
	t-1,3Dichloropropene	ug/L	<1	<1	<1	<5	<5
	t-1,4-Dichloro-2-butene	ug/L	<1	<1	<1	<5	<5
	Tetrachloroethene	ug/L	<1	<1	<1	<5	<5
	Toluene	ug/L	<1	<1	<1	<5	<5
	Trichloroethene	ug/L	<1	<1	<1	<5	<5
	Trichlorofluoromethane	ug/L	<1	<1	<1	<5	<5
	Vinyl Acetate	ug/L	<1	<10	<10	<5	<5
	Vinyl Chloride	ug/L	<1	<1	<1	<5	<5
74-88-4	Iodomethane					<5	<5
1634-04-4	ropane2methoxy2methyl					<5	<5
13330-20-7	Xylene (total)					<5	<5
57-12-5	Cyanide					<10	<10

**M+(3sd)**

447.181732  
9.58259628  
308.831936  
2667.38083  
0  
8.45366108  
8.5314442  
239.018646  
447.181732  
564.526909  
0.00041213  
0.17745967  
24.9380644  
4.89282022  
#DIV/0!  
0.00661507  
0.19269419  
#DIV/0!  
  
0.01774597  
197.538009  
0.01538104  
  
#DIV/0!  
0.00469457  
9.40462567  
0.0471309  
18.9257128  
0.33439883  
0.00810879  
46.7900168  
#DIV/0!  
#DIV/0!  
173.067257  
#DIV/0!  
0.01340776  
0.18749468  
1246.15008  
79.3977894  
30.1226912  
0.13867406  
9.64404126  
0.96915389

CAS	28 baseline	Analyte	Units	June_09	Aug_09	Sept_09	Dec_09	Jun_10	Sept_10	Dec_10	mar_11	Jun_11	Sept_11	DEC_11	Mar_12	Jun_12	Sept_12	WMean(M)	stan dev(sd)	STV+M+(3sd)
		Well_Depth	feet	38.56	38.56	38.56	38.56													
		Chloride	mg_l	85.6	112	122	123	260	240	250	300	330	170	280	310	300	324	229.042857	87.88608636	492.7011162
		TKN	mg_l	10.3	6.04	5.9	7.7	14	16	28	36	27	8.4	25	28	40	39	20.81	12.51290472	58.34871417
		Alkalinity	mg_l	212	321	419	495	800	900	770	1100	1000	700	1000	910	1100	728	746.785714	287.1491648	1608.233209
		Spec_Cond	umhos_cm	740	1330		950	2100	2200	1800	2700	2700	1800	2600	2600	2700	1967	2014.38462	674.376198	4037.513209
		pH		9.8	6.3		9.81	8.76	7.3	7.3	7.28	7.13	7.2	6.97	7.4lab/8.05f	7.09	7.34			0
		Ammonia as N	ppm	6.04	4.52	4.66	8.05	5.2	14	26	34	26	8.4	24	26	38	24.4	17.805	11.76087958	53.08763874
		Bromide	ppm	0.73	>2	6.66	2	0.8	1.5	6.2	1.5	<.5	0.7	1.8	<.5	3	1.53	2.40181818	2.106420327	8.721079162
		COD	ppm	162	16.9	28.9	50.7	110	170	90	120	60	50	150	170	180	134	106.607143	56.96162628	277.4920217
		Chloride	ppm	85.6	112	122	123	260	240	250	300	330	170	280	310	300	324	229.042857	87.88608636	492.7011162
		Hardness	ppm	295	334	374	382	940	660	500	580	830	670	800	610	560	530	576.071429	193.8208786	1157.534064
		Mercury	ppm	>.0002	>0.0002		0.0002	0.0013	<.00025			<.0003					<.0001	0.00075	0.000484522	0.002203567
		Nitrate	ppm	0.19	>0.1	<.1	0.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	0.145	0.055534367	0.311603101
		Sulfate	ppm	100	96.6	60.6	74.2	90	65	23	42	120	140	63	36	17	11.2	67.0428571	39.10594514	184.3606926
		Aluminum	ppm	55.9	1.02			200	10			7					3.56	46.2466667	78.04485753	280.3812393
		Antimony	ppm	>.06	>0.025			<.025	<.005			0.06					<.0018	0.06	0.024494897	0.133484692
		Arsenic	ppm	0.0169	>0.025			0.07	<.005			<.025					0.0051	0.03066667	0.027571555	0.113381333
		Barium	ppm	0.238	0.155			0.85	0.23			0.33					0.202	0.33416667	0.259140438	1.111587981
		Beryllium	ppm	>.005	>0.02			0.008	<.001			<.005					<.00012	0.008	0.003265986	0.017797959
		Boron															0.179			
		Cadmium	ppm	>.005	>0.01	<.01	0.01	<.025	<.005	<.005	<.005	<.025	<.005	<.005	<.005	<.025	<.000087	0.01	0.002672612	0.018017837
		Calcium	ppm	99.3	120	134	137	290	220	180	200	280	230	260	200	120	183	189.521429	61.90394766	375.2332716
		Chromium	ppm	0.0644	0.00585J			0.27	0.014			0.092					0.0227	0.09262	0.100477906	0.394053719
		Chromium Hex															<.02			
		Cobalt	ppm	>.05	>0.02			0.13	0.009			<.025					0.0029	0.0473	0.052217765	0.203953296
		Copper	ppm	0.11	0.0068J			0.47	0.02			<.05					0.0102	0.15255	0.18517381	0.708071431
		Iron	ppm	57.2	3.5	3.63	4.14	220	16	9	13	23	12	12	14	18	8.37	29.56	56.42854774	198.8456432
		Lead	ppm	0.3	0.00895J	0.00596	0.015	1.4	0.066	0.015	0.021	0.079	0.00524	0.019	0.037	0.074	0.0387	0.15968462	0.368201782	1.264289962
		Magnesium	ppm	12.2	8.22	9.48	9.65	52	23	15	18	33	1.2	36	30	26	21.2	21.0678571	13.52865004	61.65380727
		Manganese	ppm	1.49	0.433	0.513	0.622	6.4	1.2	0.96	1.3	2.1		1.4	1.2	1.2	0.966	1.52184615	1.531453386	6.116206313
		Nickel	ppm	0.0462	0.00621J			0.18	0.02			<.05					0.0132	0.06485	0.069128798	0.272236393
		Potassium	ppm	33	23.5	28	23.2	58	54	60	72	87	39	74	74	85	59.9	55.0428571	22.30293924	121.9516749
		Selenium	ppm	>.005	>0.025			<.05	<.01			<.05					0.0055	0.0055	0.002245366	0.012236097
		Silver	ppm	>.01	>0.02			<.025	<.005			<.05					<.00029	#DIV/0!	0	#DIV/0!
		Sodium	ppm	60.6	22	18.8	27.5	140	190	200	220	230	110	230	240	220	225	152.421429	87.10690318	413.7421381
		Thallium	ppm	>.01	>0.015			<.025	<.005			<.025					<.0029	#DIV/0!	0	#DIV/0!
		Vanadium	ppm	0.0895	>0.02			0.33	0.02			<.025					0.0068	0.111575	0.129737588	0.500787763
		Zinc	ppm	0.561	0.0653			2.4	0.14			<.05					0.0467	0.6426	0.935970564	3.450511691
		TDS	ppm	517	659	760	820	1300		1100	1300	2400	1000	1400	1400	720	1250	1125.07692	487.0912751	2586.350748
		BOD	ppm	5	12	17	13	25			19	20	28	13	25	25	25	18.9166667	7.051219538	40.07032528
		TOC	ppm	12.4	14	16	17	43	29	31	38	36	20	45	38	43	41.2	30.2571429	12.03927638	66.37497201
		Phenolics	ppm	>.005	0.0416	0.0437	0.0175	0.003	<.001	0.035	0.025	<.001	0.003	<.001	0.018	<.001	<.005	0.02335	0.016747111	0.073591332
		TKN	ppm	10.3	6.04	5.9	7.7	14	16	28	36	27		25	28	40	39	21.7646154	12.48195806	59.21048955
		DO											0.09	0.12	0.1	0.2	0.09	0.12	0.046368092	0.259104277
		Eh/ORP											-100	-100	-100	-100	-156	-111.2	25.04396135	-36.06811596
		1,1 Dichloroethan	ug/L					<1				<1					<5			
		1,1 Dichloroethen	ug/L					<1				<1					<5			
		1,2 Dibromoethan	ug/L					<1				<1					<5			
		1,2 Dichlorobenzene	ug/L					<1				<1					<5			
		1,2 Dichloroethan	ug/L					<1				<1					<5			
		1,2 Dichloropropan	ug/L					<1				<1					<5			
		1,4 Dichlorobenzene	ug/L					<1				<1					<5			
		111 Trichloroethar	ug/L					<1				<1					<5			

1112Tetrachloroeth:	ug/L	<1	<1	<5
112 Trichloroethar	ug/L	<1	<1	<5
1122Tetrachloroeth:	ug/L	<1	<1	<5
123-Trichloropropa	ug/L	<1	<1	<5
2-Hexanone	ug/L	<10	<10	<5
Acetone	ug/L	<10	<10	5
Acrylonitrile	ug/L	<5	<5	<5
Benzene	ug/L	<1	<1	<5
Bromochlorometha	ug/L	<1	<1	<5
Bromodichlorometh:	ug/L	<1	<1	<5
Bromoform	ug/L	<1	<1	<5
Bromomethane	ug/L	<1	<1	<5
c-1,2-Dichloroether	ug/L	<1	<1	<5
c-1,3Dichloroprope	ug/L	<1	<1	<5
Carbon disulfide	ug/L	<1	2	<5
Carbon Tetrachlori	ug/L	<1	<1	<5
Chlorobenzene	ug/L	<1	<1	<5
124-48-1 orodibromometh:	ug/L	<1	<1	<5
Chloroethane	ug/L	<1	<1	<5
Chloroform	ug/L	<1	<1	<5
Chloromethane	ug/L	<1	<1	<5
96-12-8 bromochloroprop:	ug/L	<1	<1	<5
Dibromomethane	ug/L	<1	<1	<5
Ethyl Benzene	ug/L	<1	<1	<5
m + p Xylene	ug/L	<2	<2	<5
78-93-3 ethyl Ethyl Keton	ug/L	<10	<10	<5
Methylene Chlorid	ug/L	<1	<1	<5
108-10-1 ethylisobutylketon	ug/L	<10	<10	<5
o Xylene	ug/L	<1	<1	<5
Styrene	ug/L	<1	<1	<5
t-1,2-Dichloroether	ug/L	<1	<1	<5
t-1,3Dichloropropei	ug/L	<1	<1	<5
t-1,4-Dichloro-2-but	ug/L	<1	<1	<5
Tetrachloroethene	ug/L	<1	<1	<5
Toluene	ug/L	<1	<1	<5
Trichloroethene	ug/L	<1	<1	<5
Trichlorofluorometh:	ug/L	<1	<1	<5
Vinyl Acetate	ug/L	<1	<10	<5
Vinyl Chloride	ug/L	<1	<1	<5
74-88-4 Iodomethane				<5
1634-04-4 ane2methoxy2methyl				6JN
13330-20-7 Xylene (total)				<5
57-12-5 Cyanide	mg_l			<10

CAS	28I Baseline	Analyte	Units	June_09	Aug_09	Sept_09	Dec_09	Jun_10	Sept_10	Dec_10	Mar_11	Jun_11	Sept_11	DEC_11	Mar_12	Jun_12	Sept_12	WMean(M)	stan dev(sd)	STV+M+(3sd)	
		Well_Depth	feet	47.75	47.75	47.5	47.7														
		Chloride	mg_l	97	108	100	109	130	140	110	96	140	140	150	110	100	136	119	19.23938269	176.7181481	
		TKN	mg_l	5.4	3.54	3.98	5.6	12	14	13	9.8	1.4	15	18	14	11	18.3	10.3585714	5.509306612	26.88649126	
		Alkalinity	mg_l	82.7	134	180	174	240	240	200	230	230	240	200	240	190	167	196.264286	46.7274521	336.446642	
		Spec_Conc	umhos_cm	520	630		584	720	880	720	800	870	910	860	840	880	641	758.076923	130.444408	1149.410147	
		pH		10.5	6.7		9.53	9.77	8.72	8.9	7.96	8.48	8.9	7.11	9.3lab/8.98f	8.08	9.27	8.66	2.617172579	16.51151774	
		Ammonia as N	ppm	3.51	2.62	2.66	6	11	13	11	9	14	14	17	13	10	11.2	9.85642857	4.554047409	23.5185708	
		Bromide	ppm	1.59	>2	<2	2	<.5	1.4	5.9	0.97	<.5	0.8	0.6	<.5	1.2	0.93	1.71	1.534873908	6.314621723	
		COD	ppm	18.2	>10	16.2	21.1	50	70	<40	<40	60	50	100	80	150	84.9	63.6727273	44.38198575	196.8186845	
		Chloride	ppm	97	108	100	109	130	140	110	96	140	140	150	110	100	136	119	19.23938269	176.7181481	
		Hardness	ppm	124	152	150	120	110	180	170	150	120	120	80	110	130	104	130	27.31018407	211.9305522	
		Mercury	ppm	>.0002	>0.0002		0.0002	<.00025	<.00025			<.0003					<.0001	0.0002	7.55929E-05	0.000426779	
		Nitrate	ppm	>.1	>0.1	<.1	0.328	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	0.328	0.087661687	0.590985062	
		Sulfate	ppm	97	50.6	79.4	18.5	16	38	48	27	7	12	5	36	32	25.2	35.1214286	26.67872038	115.1575897	
		Aluminum	ppm	2.4	0.177			3.5	0.69			0.16					0.572	1.24983333	1.378238937	5.384550143	
		Antimony	ppm	>.06	>0.025			<.025	<.005			<.025					<.0018	#DIV/0!	0	#DIV/0!	
		Arsenic	ppm	>.01	>0.025			<.025	0.01			<.025					0.0174	0.0137	0.007451622	0.036054865	
		Barium	ppm	>.2	0.0975			0.066	0.053			0.049					0.0355	0.0602	0.032349137	0.157247411	
		Beryllium	ppm	>.005	>0.02			<.005	<.001			<.005					<.00012	#DIV/0!	0	#DIV/0!	
		Boron															0.107				
		Cadmium	ppm	>.005	>0.01	<.01	0.01	<.025	<.005	<.005	<.005	<.025	<.005	<.005	<.005	<.025	<.000087	0.01	0.002672612	0.018017837	
		Calcium	ppm	46	56.1	55	43.3	40	65	62	53	43	41	29	40	44	32.3	46.4071429	10.52714179	77.98856823	
		Chromium	ppm	>.01	>0.02			<.025	<.005			<.025					0.0096	0.0096	0.003919184	0.021357551	
		Chromium Hex															<.02				
		Cobalt	ppm	>.05	>0.02			<.025	<.005			<.025						0.0003	0.0003	0.000122474	0.000667423
		Copper	ppm	>.025	0.00552J			<.05	<.01			<.05						0.0027	0.0027	0.00110227	0.006006811
		Iron	ppm	2.82	0.443	0.542	0.792	5.8	1.5	1.1	0.25	0.32	0.86	0.88	0.2	0.8	0.82	1.22335714	1.474097878	5.645650778	
		Lead	ppm	0.0173	>0.015	<.015	0.015	0.031	0.005	0.005	<.005	<.025	<.005	0.005	<.005	<.025	0.0087	0.01242857	0.009179145	0.039966006	
		Magnesium	ppm	>5	2.92	3.16	2.92	3.6	5.2	4.9	5.2	3.9	3.3	2	2.4	4	2.21	3.51615385	1.403000905	7.72515656	
		Manganese	ppm	0.0752	0.0418	0.0405	0.057	0.16	0.05	0.08	0.12	0.17	0.15	0.09	0.06	0.11	0.164	0.09775	0.047649889	0.240699667	
		Nickel	ppm	>.04	>0.02			<.05	<.01			<.05					0.0163	0.0163	0.006654447	0.036263341	
		Potassium	ppm	41.6	30.3	36.6	28.6	54	53	60	46	63	64	73	96	65	61.1	55.1571429	18.02356211	109.2278292	
		Selenium	ppm	>.005	>0.025			<.05	<.01			<.05					<.0021	#DIV/0!	0	#DIV/0!	
		Silver	ppm	>.01	>0.02			<.025	<.005			<.025					<.00029	#DIV/0!	0	#DIV/0!	
		Sodium	ppm	68.2	19.2	16.2	25.3	60	69	74	59	84	87	82	67	57	69.6	59.8214286	23.32236228	129.7885154	
		Thallium	ppm	>.01	>0.015			<.025	<.005			<.025					<.0029	#DIV/0!	0	#DIV/0!	
		Vanadium	ppm	>.05	>0.02			<.025	<.005			<.025					0.0137	0.0137	0.005593002	0.030479005	
		Zinc	ppm	0.0389	0.0475			0.08	0.03			<.05					0.0105	0.04138	0.028443306	0.126709919	
		TDS	ppm	412	402	402	394	390		480	420	750	450	340	480	410	431	443.153846	99.55722488	741.8255208	
		BOD	ppm	3	7.6	19	2.0	27			6.9	48 >41		27	18	24	33	19.5909091	14.64845374	63.53627031	
		TOC	ppm	7.09	6.4	11	12	14	15	9.1	9.5	18	15	18	12	11	17.2	12.5207143	3.816684958	23.97076916	
		Phenolics	ppm	>.5	0.024	0.03	0.0227	0.008	0.034	0.002	0.007	0.05	0.017	0.16	0.072	<.001	0.118	0.04539167	0.047691774	0.188466989	
		TKN	ppm	5.4	3.54	3.98	5.6	12	14	13	9.8	1.4	15	18	14	11	18.3	10.3585714	5.509306612	26.88649126	
		DO											0.04	0.11	0.06	1.2	0.04	0.29	0.509509568	1.818528704	
		Eh/ORP											-300	-200	-200	-80	-265.8	-209.16	84.12804526	43.22413579	
		1,1 Dichloroetha	ug/L					<1				<1					<5				
		1,1 Dichloroether	ug/L					<1				<1					<5				
		1,2 Dibromoetha	ug/L					<1				<1					<5				
		1,2 Dichlorobenz	ug/L					<1				<1					<5				
		1,2 Dichloroetha	ug/L					<1				<1					<5				
		1,2 Dichloroprop	ug/L					<1				<1					<5				
		1,4 Dichlorobenz	ug/L					<1				<1					<5				
		111 Trichloroeth	ug/L					<1				<1					<5				

1112Tetrachloro	ug/L	<1	<1	<5
112 Trichloroeth	ug/L	<1	<1	<5
1122Tetrachloro	ug/L	<1	<1	<5
123-Trichloropro	ug/L	<1	<1	<5
2-Hexanone	ug/L	<10	14	<5
Acetone	ug/L	<10	<10	28
Acrylonitrile	ug/L	<5	<5	<5
Benzene	ug/L	<1	<1	1
Bromochloromet	ug/L	<1	<1	<5
Bromodichlorom	ug/L	<1	<1	<5
Bromoform	ug/L	<1	<1	<5
Bromomethane	ug/L	<1	<1	<5
c-1,2-Dichloroeth	ug/L	<1	<1	<5
c-1,3Dichloropro	ug/L	<1	<1	<5
Carbon disulfide	ug/L	<1	1	1
Carbon Tetrachl	ug/L	<1	<1	<5
Chlorobenzene	ug/L	<1	<1	<5
124-48-1 Chlorodibromom	ug/L	<1	<1	<5
Chloroethane	ug/L	<1	<1	<5
Chloroform	ug/L	<1	<1	<5
Chloromethane	ug/L	<1	<1	<5
96-12-8 Dibromochloropr	ug/L	<1	<1	<5
Dibromomethane	ug/L	<1	<1	<5
Ethyl Benzene	ug/L	<1	<1	<5
m + p Xylene	ug/L	<2	<2	<5
78-93-3 Methyl Ethyl Ketc	ug/L	<10	<10	4
Methylene Chlora	ug/L	<1	<1	<5
108-10-1 Methylisobutylke	ug/L	<10	<10	<5
o Xylene	ug/L	<1	<1	<5
Styrene	ug/L	<1	<1	<5
t-1,2-Dichloroeth	ug/L	<1	<1	<5
t-1,3Dichloropro	ug/L	<1	<1	<5
t-1,4-Dichloro-2-l	ug/L	<1	<1	<5
Tetrachloroether	ug/L	<1	<1	<5
Toluene	ug/L	<1	1	2
Trichloroethene	ug/L	<1	<1	<5
Trichlorofluorom	ug/L	<1	<1	<5
Vinyl Acetate	ug/L	<1	<10	<5
Vinyl Chloride	ug/L	<1	<1	<5
74-88-4 Iodomethane	ug/L			<5
1634-04-4 ane2methoxy2m	ug/L			
13330-20-7 Xylene (total)	ug/L			<5
57-12-5 Cyanide	ug/L			<10

GM26_Op	STV	Dec_12	Mar_13	Jun_13	Dec_13	Jun_14	Oct_14	Dec_14	March_15	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16	Mar_17
Date Collected		1/4/2013	4/9/2013	Jun_13	3/11/2014	6/30/2014	10/30/2014	1/2/2015	5/15/2015	7/28/2015	10/27/2015	12/10/2015	3/24/2016	6/16/2016	10/6/2016	2/1/2017	4/19/2017
Date Received		1/4/2013	4/9/2013	6/27/2013													
Analyte	Units																
pH		6.95	6.64	6.52	6.08	6.34	6.25	6.64	6.46	6.06	6.42	6.42	6.57	6.84	7.22	7.35	6.46
spec cond	nhos_c 1739	590	505	614	511	405	578	658	540	377	1006	1236	1196	1196	151	914	740
ORP	361	133.9	114.7	62.3	71.7	100	131	132.2	145.7	78.8	342.6	329.1	103.4	97.3	44.1	191.2	140.7
DO	mg/l 4.04	1.49	2.36	4.93	2.46	4.12	4.57	2.85	4.47	4.83	4	3.43	4.69	5.71	3.48	4.55	
Temp	C	15.89	15.6	14.75	15.56	15.67	17.87	17.21	13.19	15.28	18.5	18.72	14.9	14.43	19.5	16.3	14.71
Turbidity	NTU	39 D	2.3	3.6	14	3.8	<1	2.9	<1.0	4.3	2.5	6.1	5	53 D			
24959-67-9 Bromide	mg/L 11.1	1.06	0.57	1.12	1.05	0.6	1.28	1.55	0.71	0.79	1.22	1.80	0.78	<0.50	<.5	1.3	0.89
16887-00-6 Chloride	mg/L 146	102 D	66.6 D	97.7 D	107	66.3	105	132	114 D	79.4 D	226 D	250 D	299 D	276 D	14.2	171	117
14808-79-8 Sulfate	mg/L 170	39.4	52.5 D	131 D	53.7	42.3	47.4	54.6	45.6	20.9	76.6 D	71.8 D	74.4 D	92.5 D	5.8	83.5	59.7
Nitrogen, Kjeldahl, Total	mg/L 7.1	0.64	0.17	0.17	1.94	<.1	<.1	<0.5	<.100	<0.100	0.500 U	0.500 U	0.100 U	0.21	<.1	2.7	<.1
14797-55-8 Nitrate as N	mg/L	4.17 D	4.89 D	5.32 D	5.12	5.1	5.55 D	6.32	5.94 D	4.43 D	5.03 D	5.24 D	5.06 D	4.75 D	0.73	4.3 D	5
14797-65-0 Nitrite as N	mg/L	0.100 U	0.100 U	<.1	<.1	<.1	<.1	<0.1	<.100	<0.100	0.100 U	0.100 U	0.100 U	<0.10	0.73	<.05	5
Chemical Oxygen Demand	mg/L 142	10.0 U	10.0 U	10.5	<10	<10	<10.0	<10.	<10.0	10.4	10.3	<10.0 U	<10.0 U	22.5	<10	27.6	31.7
Phenolics, Total Recoverab	mg/L 0.08	.005 U	.005 U	<.005	<.005	<.005	<.005	<.005	<.00500	<.00500	0.0229	<.005	<5.00 U	<.005	<.005	<.005	0.0172
18540-29-9 Chromium, Hexavalent	mg/L				<.02	<.02			<0.0200							<.02	<.02
Color	units				15	5			<5.00								
Alkalinity, Total (As CaCO3	mg/L 276	72.6 D	75.6 D	85.3 D	64.5	59.3	63.2	85.9	70.9 D	91.9	117	137 D	126	145	54.2	107	68.6
Hardness (As CaCO3)	mg/L 462	220 D	200 D	230 D	190	112	300	240	320 D	108 D	340 D	250 D	290 D	290 D	54	230	250
Total Dissolved Solids	mg/L 772	423	306	487	328	323	404	407	406	310	1130	742	686 D	750	92	557	470
Chloride	mg/L 146				107	66.3	105	132	114	79.4	226	250	299	276	14.2	171	117
7664-41-7 Nitrogen, Ammonia (As N)	mg/L 0.28	0.100 U	0.100 U	<.1	<.1	<.1	<.1	<0.1	<0.100	<0.100	.1U	0.100 U	0.100 U	0.13	<.1	<0.10	<.1
Biochemical Oxygen Dema	mg/L 22.8	2.00 U	2.00 U	<2	<2	<2	<2.	<2.	<2.00	<2.00	2U	2.00 U	2.00 U	<2.0	<2	<2.0	<2
7429-90-5 Aluminum	mg/L 69.2	12.5			1.88	<.2	<.2	0.264	.0377 B	0.532	0.209		0.282	3.71	<.2	<.200	
7440-36-0 Antimony	mg/L 0.004	.060 U			<.0019	<.06	<.06	<.060	<.0018	<.0018	<0.0006		<.060 U	<.060	<.060	<.060	
7440-38-2 Arsenic	mg/L 0.075	.010 U			.0017 B	<.01	<.01	<.01	.0018 B	<.0014	<.0022		<.010 U	<.010	<.010	<.010	
7440-39-3 Barium	mg/L 0.93	.200 U			.134 B	<.2	<.2	<.20	.0987 B	.0955 B	.176 B		.165 J	.161 J	<.2	<.200	
7440-41-7 Beryllium	mg/L	.005 U			<.00014	<.05	<.005	<.005	<0.00010	<0.0002	<.0002		<.00030 J	<.005	<.005	<5.0	
7440-42-8 Boron	mg/L	.100 U			.0715 B	<.1			.0755 B						0.134	0.0873	
7440-43-9 Cadmium	mg/L 0.02	.005 U	.0006 B	<.0001	.0006 B	<.005	<.005	<.005	<0.0001	<.0001	<.0001	<.0001	.00050 J	<.0025	<.0025	<.0025	<.0025
7440-70-2 Calcium	mg/L 148	69.1	54.6	70.6	65.5	48.9	61.1	75.5	59	45.6	84.1	109	111.000 E	128	22.4	84.8	68.9
7440-47-3 Chromium	mg/L 0.19	0.0258			.0045 B	<.01	<.01	<.01	<.0016	.0055 B	.002 B		.009 J	.007 J	<.01	0.037	
7440-48-4 Cobalt	mg/L 0.07	.050 U			.0031 B	<.05	<.05	<.05	<.0003	.0005 B	.00040 B		.0008 J	.0027 J	<.050	<.050	
7440-50-8 Copper	mg/L 0.46	0.0741			0.0298	<.025	<.025	<.025	.001 B	.006 B	.0038 B		.005 J	.0219 J	<.025	<.025	
7439-89-6 Iron	mg/L 81	22	7.28	7.61	2.28	<.1	0.151	0.414	.0483 B	0.841	0.327	0.452	0.489	5.82	0.412	0.22	0.322
7439-92-1 Lead	mg/L 0.64	0.189	0.069	0.0151	0.0919	0.0062	<.005	<.005	.0015 B	0.0101	0.0072	0.0068	0.009	0.0461	0.0134	<.005	<.005
7439-95-4 Magnesium	mg/L 16.8	6.26	5.32	5.85	6.18	<5	4.99	5.7	4.050 B	3.120 B	6.08	7.5	7.770 E	10.9	1.39	5.97	4.51
7439-96-5 Manganese	mg/L 1.5	0.435	0.139	0.0162	0.134	<.015	<.015	<.015	.0013 B	0.0191	.0148 B	.0118 B	.0136 J	0.0927	0.0274	<.01	<.010
7440-02-0 Nickel	mg/L 0.12	.0400 U			.0032 B	<.04	<.04	<.040	0.00070 B	.0035 B	.0015 B		.0056 J	.0040 J	<.04	<.040	
7440-09-7 Potassium	mg/L 74	17.7	13.2	16	15.5	15.6	17.7	22	20.6	14.8	21.9	29.3	25.5	21.2	<5	20.1	18.6
7782-49-2 Selenium	mg/L 0.01	.005 U			.0021 B	<.005	<.010	<.01	<.0022	<.0029	<.0022		<.010 U	.0082 J	<.01	<.010	
7440-22-4 Silver	mg/L	.010 U			.00094 B	<.01	<.01	<.01	.0017 B	<.0018	<.0005		<.010 U	<.010	<.01	<.010	
7440-23-5 Sodium	mg/L 77.4	26.5	26	33.2	40.8	28.8	42.5	46.4	44.3	24.9	95.8	108	124.000 E	134	6.19	77.8	53.6
7440-28-0 Thallium	mg/L	.0100 U			<.0013	<.01	<.01	<.01	<.0027	<.0023	<.0019		<.010 U	<.010	<.01	<.010	
7440-62-2 Vanadium	mg/L 0.12	.0500 U			.0032 B	<.05	<.05	<.05	<.00050	.0013 B	<.0028		<.050 U	.0057 J	<.05	<.050	
7440-66-6 Zinc	mg/L 1.16	0.191			0.0697	<.02	<.02	<.02	.0092 B	0.0211	.0123 B		.0091 J	0.0339	<.02	<.020	
7439-97-6 Mercury	mg/L 0.002	0.000200 U			0.00028	<.0002	<.0002	<.0002	<.0001	<.0001	<.0001		<.0002 UN	<.0002	<.0002	<.00020	
630-20-6 1,1,1,2-Tetrachloroethane	µg/L				<	5.0 U			5.0 U						<5.0	<5.0	
71-55-6 1,1,1-Trichloroethane	µg/L				<	5.0 U			5.0 U						<5.0	<5.0	
79-34-5 1,1,2,2-Tetrachloroethane	µg/L				<	5.0 U			5.0 U						<5.0	<5.0	
79-00-5 1,1,2-Trichloroethane	µg/L				<	5.0 U			5.0 U						<5.0	<5.0	

GM26_Op	STV	Dec_12	Mar_13	Jun_13	Dec_13	Jun_14	Oct_14	Dec_14	March_15	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16	Mar_17
75-34-3	1,1-Dichloroethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-35-4	1,1-Dichloroethene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
96-18-4	1,2,3-Trichloropropane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
96-12-8	1,2-Dibromo-3-chloropropane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
106-93-4	1,2-Dibromoethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
95-50-1	1,2-Dichlorobenzene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
107-06-2	1,2-Dichloroethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
78-87-5	1,2-Dichloropropane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
106-46-7	1,4-Dichlorobenzene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
78-93-3	2-Butanone	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
591-78-6	2-Hexanone	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
108-10-1	4-Methyl-2-pentanone	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
67-64-1	Acetone	µg/L			3 J	5.0 U			5.0 U							<5.0	<5.0
107-13-1	Acrylonitrile	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
71-43-2	Benzene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
74-97-5	Bromochloromethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-27-4	Bromodichloromethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-25-2	Bromoform	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
74-83-9	Bromomethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-15-0	Carbon disulfide	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
56-23-5	Carbon tetrachloride	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
108-90-7	Chlorobenzene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-00-3	Chloroethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
67-66-3	Chloroform	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
74-87-3	Chloromethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
156-59-2	cis-1,2-Dichloroethene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
10061-01-5	cis-1,3-Dichloropropene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
124-48-1	Dibromochloromethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
74-95-3	Dibromomethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
	Ethanol	ug/L															
100-41-4	Ethylbenzene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
74-88-4	Iodomethane	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
	Isopropyl Alcohol	ug/L															
75-09-2	Methylene chloride	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
	Silane, methoxytrimethyl-	ug/L															
	Silanol, trimethyl-	ug/L				5.0 U											
100-42-5	Styrene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
	Sulfur dioxide	ug/L															
127-18-4	Tetrachloroethene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
108-88-3	Toluene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
156-60-5	trans-1,2-Dichloroethene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
10061-02-6	trans-1,3-Dichloropropene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
110-57-6	trans-1,4-Dichloro-2-butene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
79-01-6	Trichloroethene	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-69-4	Trichlorofluoromethane	µg/L			<				5.0 U							<5.0	<5.0
	Trimethylsilyl fluoride	ug/L				5.0 U											
	unknown	ug/L			<												
108-05-4	Vinyl acetate	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
75-01-4	Vinyl chloride	µg/L			<	5.0 U			5.0 U							<5.0	<5.0
1330-20-7	Xylene (total)	µg/L			<	10 U			5.0 U							<5.0	<5.0



GM26_Op		STV	Dec_12	Mar_13	Jun_13	Dec_13	Jun_14	Oct_14	Dec_14	March_15	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16	Mar_17
57-12-5	Cyanide	µg/L				<10	<10			10.0 U							<10	<10
	Total Organic Carbon	mg/L					2.1			1.4							3.1	2.6
	sulfide																<2	<2
	1,4 dioxane	ug/l																
27619-97-2	6:2FTS	ng/l																
39108-34-4	8:2FTS	ng/l																
2991-50-6	NEtFOSAA	ng/l																
2355-31-9	NMeFOSAA	ng/l																
375-73-5	PFBS	ng/l																
375-22-4	PFBA	ng/l																
335-77-3	PFDS	ng/l																
335-76-2	PFDA	ng/l																
307-55-1	PFDoA	ng/l																
375-92-8	PFHpS	ng/l																
375-85-9	PFHpA	ng/l																
355-46-4	PFHxS	ng/l																
375-95-1	PFNA	ng/l																
754-91-6	FOSA	ng/l																
1763-23-1	PFOS	ng/l																
335-67-1	PFOA	ng/l																
376-06-7	PFTeDA?	ng/l																
72629-94-8	PFTriA	ng/l																
	PFUnA	ng/l																
307-24-4	PFHxA	ng/l																
2706-90-3	PFPeA	ng/l																

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Analyte	Jul_17 20-Jul	Sept_17 9/26/2017	Dec_17 12/20/2017	Mar_18 3/19/2018	Sept_18 9/24/2018	Dec_18 12/10/2018	Mar_19 3/20/2019	Jun_19 6/10/2019	Sep_19 9/13/2019	Dec_19 12/26/2019
pH	6.2	6	6.21	6.43	7.27	7.18	7.35	7.44	7.35	7.55
spec cond	83	555	560	644	937	980	1069	1002	1120	679
ORP	126.8	-16.1	112.4	123.7	-60.3	-63.8	-71.3	-76.5	-71.9	-82.2
DO	2.57	7.2	6.04	7.2	5.6	4.93	5.18	5.49	4.8	5.16
Temp	15.56	16.98	17.58	15.45	16.4	15.1	12.1	14.9	12.3	13.5
Turbidity						675 D	340	19.0 D	275	102 D
Bromide	<.5	0.86	0.70	0.85	0.64	0.66	0.80	0.58	0.27J	<0.50
Chloride	137 D	137	110 D	118 D	116 D	149 D	225 D	79.8 D	73.4 D	81.3 D
Sulfate	53.9 D	35.4	48.4	62.9 D	49.1	480 D	128 D	80.8 D	73.0 D	84.2 D
Nitrogen, Kjeldahl, Total	1.4	<0.022	<0.10	6.2 D	2.6	0.87	<0.10	<0.50	<0.10	0.48
Nitrate as N	4.1 D	6.1	4.7 D	3.7 D	5.8 D	4.4 D	8.0 D	6.0 D	4.5 D	4.5 D
Nitrite as N	<.05	<0.0020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chemical Oxygen Demand	23.4	11.9	9.3J	22.0	126	63.7	34.5	10.2	19.0	34.5
Phenolics, Total Recoverab	<.01	<0.00084	<.0050	.0016J	.0114J	0.0084	0.0138	<.01	.0026J	<.0050
Chromium, Hexavalent									<0.040 D	
Color									75	
Alkalinity, Total (As CaCO3	37.4	57.6	65.6	48.0	70.6	93.1	159	112	96.3	87.4
Hardness (As CaCO3)	200	150	120	147	148	220	250	175	173	173
Total Dissolved Solids	363	397	310	417	338	562	664	426	338	338
Chloride	137 D	137	110	118	116	149	225 D	79.8 D	73.4	81.3
Nitrogen, Ammonia (As N)	<.1	<0.016	0.022J	0.062J	0.12	0.047J	0.022J	0.084J	0.039	0.035J
Biochemical Oxygen Dema	<2	<1.0	1.0J	<4.0 D	<4	<4.0 D	1.0J D	1.0J	1.01	1.0J
Aluminum					122				8.3	
Antimony					<.060				<.06.0	
Arsenic					0.0908				.0086J	
Barium					0.409				.0987J	
Beryllium					0.0079				0.00040J	
Boron					0.0783				0.107	
Cadmium	<.0025	<0.000063	<.0025	<.0025	0.00083J	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	60.4	59.2	55.2	63.6	61.7	69.1	97.9	64.6	60	53.5
Chromium					0.124				0.0109	
Cobalt					0.09				.0104J	
Copper					0.658				0.0635	
Iron	28	0.2	0.0539	6.91	194	67.2	25.6	21.3	14.2	22.7
Lead	0.266	<.0013	<.0050	0.0578	1.69	0.619	0.358	0.189	0.164	0.191
Magnesium	5.41	3.68	3.63	5.21	15	8.92	10.6	6.41	5.86	6.06
Manganese	0.583	0.0108	<.0100	0.102	3.38	1.19	0.638	0.4	0.358	0.425
Nickel					0.119				.0237J	
Potassium	17	23	17.1	16.8	20.1	20.5	19.2	17.5	16.1	14.3
Selenium					<.010				<.010	
Silver					.0060J				<.010	
Sodium	46.8	41.4	44.9	52.1	42.8	65.8	113	45.2	41.2	35.9
Thallium					<.0100				<.010	
Vanadium					0.151				.0118J	
Zinc					1.11				0.108	
Mercury					0.0026				0.00014J	
1,1,1,2-Tetrachloroethane					<1.0				<1.0	
1,1,1-Trichloroethane					<1.0				<1.0	
1,1,2,2-Tetrachloroethane					<1.0				<1.0	
1,1,2-Trichloroethane					<1.0				<1.0	

	Jul_17	Sept_17	Dec_17	Mar_18	Sept_18	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
1,1-Dichloroethane					<1.0				<1.0	
1,1-Dichloroethene					<1.0				<1.0	
1,2,3-Trichloropropane					<1.0				<1.0	
1,2-Dibromo-3-chloropropane					<1.0				<1.0	
1,2-Dibromoethane					<1.0				<1.0	
1,2-Dichlorobenzene					<1.0				<1.0	
1,2-Dichloroethane					<1.0				<1.0	
1,2-Dichloropropane					<1.0				<1.0	
1,4-Dichlorobenzene					<1.0				<1.0	
2-Butanone					<5.0				<5.0	
2-Hexanone					<5.0				<5.0	
4-Methyl-2-pentanone					<5.0				<5.0	
Acetone					<5.0				<5.0	
Acrylonitrile					<1.0				<1.0	
Benzene					<1.0				<1.0	
Bromochloromethane					<1.0				<1.0	
Bromodichloromethane					<1.0				<1.0	
Bromoform					<1.0				<1.0	
Bromomethane					<1.0				<1.0	
Carbon disulfide					<1.0				<1.0	
Carbon tetrachloride					<1.0				<1.0	
Chlorobenzene					<1.0				<1.0	
Chloroethane					<1.0				<1.0	
Chloroform					<1.0				<1.0	
Chloromethane					<1.0				<1.0	
cis-1,2-Dichloroethene					<1.0				<1.0	
cis-1,3-Dichloropropene					<1.0				<1.0	
Dibromochloromethane					<1.0				<1.0	
Dibromomethane					<1.0				<1.0	
Ethanol										
Ethylbenzene					<1.0				<1.0	
Iodomethane					<1.0				<1.0	
Isopropyl Alcohol										
Methylene chloride					<1.0				<1.0	
Silane, methoxytrimethyl-										
Silanol, trimethyl-										
Styrene					<1.0				<1.0	
Sulfur dioxide										
Tetrachloroethene					<1.0				<1.0	
Toluene					<1.0				<1.0	
trans-1,2-Dichloroethene					<1.0				<1.0	
trans-1,3-Dichloropropene					<1.0				<1.0	
trans-1,4-Dichloro-2-butene					<1.0				<1.0	
Trichloroethene					<1.0				<1.0	
Trichlorofluoromethane					<1.0				<1.0	
Trimethylsilyl fluoride										
unknown					6.4J					
Vinyl acetate					<1.0				<1.0	
Vinyl chloride					<1.0				<1.0	
Xylene (total)					<3.0				<3.0	

	Jul_17	Sept_17	Dec_17	Mar_18	Sept_18	Dec_18	Mar_19	Jun_19	Sept_19	Dec_19
Cyanide					<10				<10	
Total Organic Carbon	1.4			2.2	6.3		4.1	3.9J	3.1	
sulfide									<2.0	
1,4 dioxane				<.2	<2	<.25	.12 J	<0.25	<0.20	<.2
6:2FTS				200	72	10 J	7.7 J	7.2	5 J	2.4
8:2FTS				<18	ND	Nd	ND	ND	ND	ND
NEtFOSAA				<18	ND	ND	ND	ND	ND	ND
NMeFOSAA				<18	ND	ND	ND	ND	ND	ND
PFBS				2.8	3.8	4.1	6.5	5.7	3.9	3.5
PFBA				230	89 B	55 B	43	43	49	45
PFDS				<1.8	3	ND	ND	ND	ND	ND
PFDA				.75 J	2.1	1.6 J	1.6 JI	1.7 J	1.2 J	1.4
PFDoA				<1.8	.56J	ND	ND	ND	ND	ND
PFHpS				.36 J	.23 J	.38 J	.52 J	.69 J	.54 J	0.5
PFHpA				160	63	50	33	34	50	49
PFHxS				10 B	8 B	11 B	16 B	13	13 B	14
PFNA				7	12	8.9	11	24	16	17
FOSA				<1.8	.97 J	ND	ND	ND	.57 JB	ND
PFOS				24	41	33	39	51	40	40
PFOA				75	31	41	36	32	27	30
PFTeDA?				<1.8	ND	.57 J	.42 JB	ND	.4 J	ND
PFTriA				<1.8	ND	ND	ND	ND	ND	ND
PFUnA				1.7 J	7.3	4.6	3.1	3.3	3.4	2.5
PFHxA				680	200	130	84	63	80	75
PFPeA				880	350	180	120	94	130	110

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GM26I_Op		STV	Dec_12	Mar_13	Jun_13	Dec_13	Jun_14	Oct_14	Dec_14	March_15	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Sept_16	
Date Collected			1/4/2013	4/9/2013	6/28/2013	3/11/2014	6/30/2013	10/30/2014	1/2/2015	5/15/2015	7/28/2015	10/27/2015	12/10/2015	3/24/2016	6/16/2016	10/6/2016	10/6/2016	
Date Received			1/4/2013	4/9/2013													DUP	
	Analyte	Units																
	pH		6	6.28	6.19	6.21	6.35	6.03	6.32	6.27	6.06	6.28	6.44	6.71	7.1	6.92		
	spec cond	umhos_cm	1414	440	387	505	519	323	582	533	668	347	950	1148	569	1104	686	
	ORP		386	120.9	133.5	77.2	69.2	93.8	150.6	124.2	170	85.7	343.4	343.9	92	99.8	56.2	
	DO	mg/l	2.54	1.83	2.49	2.59	3.61	3.18	3.85	2.38	4.44	5.26	3.81	4.34	5.26	5.34	4.26	
	Temp	C		15.16	14.24	14.82	15.14	15.92	17.47	16.95	13.48	14.97	18.04	18.32	14.45	15	18.9	
	Turbidity	NTU		21 D	2.4	2.4	11	1.2	2.0	4.5	1.3	5.9	1.2	21	2.5	370 D		
24959-67-9	Bromide	mg/L	6.9	0.68	0.58	1.15	0.91	0.6	1.33	1.29	0.66	0.80	1.55	2.32	0.59	<0.500	0.87	0.9
16887-00-6	Chloride	mg/L	137.5	68.4 D	62.4 D	95.2 D	129	63.9	110	109	198 D	114 D	283 D	239 D	123 D	236 D	143	150
14808-79-8	Sulfate	mg/L	94.3	45.2 D	41.7	49.4	44.5	30.1	43.5	49.4	39.7	24.9	74.1 D	68.6 D	50.5 D	82.6 D	56.6	58.3
	Nitrogen, Kjeldahl, Total	mg/L	1.72	0.50	0.100 U	0.100 U	0.48	<.1	<0.10	<0.50	<0.500	<1.00	<0.5	0.34	0.100 U	0.72	<.1	<.1
14797-55-8	Nitrate as N	mg/L	7.85	1.02 D	3.75 D	4.68 D	4.65	4.43	5.51	6.05	5.09 D	4.31 D	6.06 D	5.16 D	4.44 D	3.78 D	6.2	<.25
14797-65-0	Nitrite as N	mg/L		0.100 U	0.100 U	0.100 U	<.1	<.1	<0.100	<0.1	<.100	<0.1	<0.1	<0.1	0.100 U	<.1	6.2	<.25
	Chemical Oxygen Demand	mg/L	188.1	10.0 U	10.0 U	10.0 U	<10	53.4	<10.0	<10	<10.0	<10.	<10	12.9	10.0 U	22.5	13	
	Phenolics, Total Recoverable	mg/L	0.071	.005 U	.005 U	.005 U	<.005	<.005	<.005	<.005	<.0005	<.005	0.0118	0.0057	<.005 U	<.005	0.0073	0.0094
18540-29-9	Chromium, Hexavalent	mg/L					<.02	<.02			<.002							
	Color	units					15	<5			5							
	Alkalinity, Total (As CaCO3)	mg/L	168.1	32.7 D	38.6	48.5 D	52.8	32.2	36.8	37.7	48.1	95.3	106	114 D	85.4	121	94.3	96
	Hardness (As CaCO3)	mg/L	230	140 D	120 D	200 D	180	120	220	140	130 D	116 D	280 D	268 D	144 D	244 D	188	200
	Total Dissolved Solids	mg/L	514	343	205	425	336	283	402	331	489	386	690	706	383	766	474	490
	Chloride	mg/L	137.5				129	63.9		109	198 D	114	283	239	123	236	143	150
7664-41-7	Nitrogen, Ammonia (As N)	mg/L	0.53	0.100 U	0.100 U	0.100 U	<.1	<.1	<.1	<0.10	<.100	<0.1	<.1	<0.1	<.100 U	0.15	<.1	<.1
	Biochemical Oxygen Demand	mg/L	10	2.00 U	2.00 U	2.00 U	<2	<2	<2	<2.	<2.00	<2.00	<2.00	<2.00	<2.00 U	<2.0	<2	<2
	Total Organic Carbon	mg/L	5.11		1.9	1.6	1.4	10	11.7		1.1	1.4	2.59	4.85	1.69	10.3		
7429-90-5	Aluminum	mg/L	2.86	5.37			14.8	<.2	<.2	0.419	.0719 B	.150 B	.0301 B		.0458 J	37.1		
7440-36-0	Antimony	mg/L	0.01	.060 U			.0074 B	<.06	<.06	<.06	<.0018	<.0018	<.0006		.0102 J	13.1 J		
7440-38-2	Arsenic	mg/L	0.005	.010 U			0.0191	<.01	<.01	<.01	.0017 B	<.0014	<.0022		<.010 U	0.0368		
7440-39-3	Barium	mg/L	0.233	.200 U			0.224	<.2	<.2	<.2	.123 B	.04 B	.174 B		.0809 J	0.437		
7440-41-7	Beryllium	mg/L		.005 U			.0009 B	<.005	<.005	<.005	<.0001	<.0002	<.0002		<.0050 U	.0028 J		
7440-42-8	Boron	mg/L		.100 U			.0506 B	<.1			.0443 B							
7440-43-9	Cadmium	mg/L	0.02	.005 U	.0001 U	.00010 U	.0025 B	<.005	<.005	<.005	<.00010	.00030 B	<.00010	<.0001	<.0025 U	<.0025	<.0025	<.0025
7440-70-2	Calcium	mg/L	83.6	45.6	34.8	52.6	60.5	38.4	54.9	53.3	49.3	45.2	100	106	61.200 E	103	78.6	73
7440-47-3	Chromium	mg/L	0.02	0.0147			0.0311	<.01	<.01	<.01	<.0016	.0012 B	.00050 B		.0028 J	0.06		
7440-48-4	Cobalt	mg/L		.050 U			0.0118	<.05	<.05	<.05	<.0003	.00040 B	<.0002		<.050 U	.0293 J		
7440-50-8	Copper	mg/L	0.063	0.0872			0.213	<.025	<.025	<.025	.0109 B	.0127 B	.0060 B		.0049 J	0.419		
7439-89-6	Iron	mg/L	5.35	12.6	1.55	0.468	30.9	0.15	0.251	0.888	0.123	0.278	.0338 B	2.06	.0915 J	0.871	0.446	0.312
7439-92-1	Lead	mg/L	0.042	0.061	0.0143	0.0103	0.162	0.0103	<.005	0.0058	.002 B	.0028 B	0.0032	0.0164	.0026 J	0.354	<.005	<.005
7439-95-4	Magnesium	mg/L	7.93	5.9	3.99 B	5.64	6.26	<5	4.85	3.77	3.6 B	3.930 B	6.77	7.59	3.930 E	13.3	5.65	5.58
7439-96-5	Manganese	mg/L	0.18	0.124	0.0208	.0059 B	0.299	<.015	<.015	<.015	.0031 B	.0086 B	.0031 B	0.031	.0024 J	0.819	<.01	<.01
7440-02-0	Nickel	mg/L	0.003	.040 U			.0123 B	<.04	<.04	<.04	.0014 B	.0013 B	<.0003		.0027 J	.0239 J		
7440-09-7	Potassium	mg/L	53	10.2	8.7	11.5	16.1	13.6	17.5	21.2	14.6	12.6	24.9	33.7	21.6	24.5	15.3	17.4
7782-49-2	Selenium	mg/L		.005 U			.008 B	<.005	<.01	<.01	<.0022	.0035 B	<.22		<.010 U	<.010		
7440-22-4	Silver	mg/L		.010 U			<.00043	<.01	<.01	<.01	.0013 B	<.0018	<.0005		<.010 U	.003 J		
7440-23-5	Sodium	mg/L	50	25.6	19.2	30.5	45.4	23.3	42.8	40.6	92.4	34.7	111	95	66.200 E	116	55.6	57.2
7440-28-0	Thallium	mg/L		.010 U			<.0013	<.01	<.01	<.01	<.0027	<.0023	<.0019		<.010 U	<.010		
7440-62-2	Vanadium	mg/L	0.002	.050 U			.0242 B	<.05	<.05	<.05	<.0005	.00050 B	<.0028		<.050 U	0.0623		
7440-66-6	Zinc	mg/L	0.17	0.0459			0.12	<.02	<.02	<.02	.0106 B	0.0222	.0101 B		<.020 U	0.231		
7439-97-6	Mercury	mg/L	0.0004	0.0002 U			0.00036	<.0002	<.0002	<.0002	<.0001	<.0001	<.0001		<.0002 UN	0.00068		
630-20-6	1,1,1,2-Tetrachloroethane	µg/L					<	5.0 U			5.0 U							
71-55-6	1,1,1-Trichloroethane	µg/L					<	5.0 U			5.0 U							
79-34-5	1,1,2,2-Tetrachloroethane	µg/L					<	5.0 U			5.0 U							
79-00-5	1,1,2-Trichloroethane	µg/L					<	5.0 U			5.0 U							



GM26I_Op		STV	Dec_12	Mar_13	Jun_13	Dec_13	Jun_14	Oct_14	Dec_14	March_15	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Sept_16
27619-97-2	6:2FTS	ng/l															
39108-34-4	8:2FTS	ng/l															
2991-50-6	NEtFOSAA	ng/l															
2355-31-9	NMeFOSAA	ng/l															
375-73-5	PFBS	ng/l															
375-22-4	PFBA	ng/l															
335-77-3	PFDS	ng/l															
335-76-2	PFDA	ng/l															
307-55-1	PFDoA	ng/l															
375-92-8	PFHpS	ng/l															
375-85-9	PFHpA	ng/l															
355-46-4	PFHxS	ng/l															
375-95-1	PFNA	ng/l															
754-91-6	FOSA	ng/l															
1763-23-1	PFOS	ng/l															
335-67-1	PFOA	ng/l															
376-06-7	PFTeA	ng/l															
72629-94-8	PFTriA	ng/l															
	PFUnA	ng/l															
307-24-4	PFHxA	ng/l															
2706-90-3	PFPeA	ng/l															

B found in blank  
J <RL >mdl

Analyte	Dec_16 2/1/2017	Mar_17 4/19/2017	Jul_17 7/20/2017	Sept_17 9/26/2017	9/17dup lab error	Sept17dup rerun lab	Dec_17 12/20/2017	Mar_18 3/19/2018	Sept_18 9/24/2018	Dec_18 12/10/2018	Mar_19 3/20/2019	Jun_19 6/10/2019	Sep_19 9/13/2019	Dec_19 2/27/2019	
pH	7.05	6.54	5.48	6.06			6.17	6	6.57	6.5	7.15	6.78	7.38	7.61	
spec cond	965	654	522	550			568	442	959	827	986	1072	1003	916	
ORP	203.4	205	96.2	-40.2			93.7	171.6	-36.6	-29.3	-62.7	-45.6	-63	-83.2	
DO	4.55	5.22	1.72	7.28			6.11	5.43	6.43	3.76	4.7	3.45	3.57	4.23	
Temp	16.58	14.78	15.13	16.89			17.31	15.27	16.2	13.9	12.8	15.5	16.8	12.2	
Turbidity										219 D	70	10.2 D	204	57.5 D	
Bromide	1.4	0.94	0.66	1.1	1.1		1.1	0.83	0.52	0.89	0.49J	0.43J	0.53	0.53	0.17J
Chloride	192 D	104 D	107 D	149	136		136	109 D	70.6 D	128 D	67.9 D	62.2 D	72.5 D	75.5 D	76.1 D
Sulfate	85.3 D	55.0 D	42.5	35.5	35.3		35.3	49.6	48.6	48.1	49.8	58.0 D	59.3 D	71.9 D	77.2 D
Nitrogen, Kjeldahl, Total	<0.10	<0.10	<.1	<0.022	<0.022	<.022	<0.10	<0.10	0.98	0.51	<0.10	<0.50	<0.10	0.52	
Nitrate as N	4.3 D	5.6 D	4.3 D	6.4	5.1		5.1	4.5 D	3.5 D	5.6 D	2.9 D	4.7 D	4.1 D	4.2 D	3.8 D
Nitrite as N	<0.050	<0.050	<.05	<0.0020	<0.0020	<.002	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chemical Oxygen Demand	27.6	17.2	<10	11.9	<6.4	<6.4	11.4	11.4	44.1	28.6	<10.0	<10.0	<10.0	23.4	
Phenolics, Total Recoverable	<.005	0.0292	<.005	<0.00084	<0.00084	<.00084	.0029J	.0029J	0.0268	0.0069	.0043J	<.01	.0026J	<.005	
Chromium, Hexavalent	<.02	<.02							<0.20 D				<.04		
Color		5												50	
Alkalinity, Total (As CaCO3)	107		72.4	69.4	67.6	61.8	61.8	49.8	70.6	48.1	51.3	51.2	52.5	47.9	64.7
Hardness (As CaCO3)	230		200	140	148	150	150	120	148	170	120	92.0	100	133	160
Total Dissolved Solids	557		429	326	415	381	381	352	338	342	256	248	340	318	293
Chloride		192	104	107 D	149	136	136	109	116		67.9	62.2	72.5		76.1
Nitrogen, Ammonia (As N)	<.1	<.1		0.13	<0.016	<0.016	<.016	<0.10	0.12	0.075J	0.057J	<0.10	0.066J	0.035	0.10
Biochemical Oxygen Demand	<2	<2	<2	<1.0	<1.0	<1	1.0J	<4	<4.0 D	<4.0 D	1.0J	1.0J		1	1.0J
Total Organic Carbon		1.5	2.3	<10	1.3	1.3		1.3	1.4	1.2		2.2	1.9	1.8	2.5
Aluminum	<.2	<.200								29.8				5.04	
Antimony	<.06	<.060								<.060				<.060	
Arsenic	<.01	<.010								0.0429				<.010	
Barium	<.200	<.200								0.259				.113J	
Beryllium	<.005	<.005								.0024J				0.00031J	
Boron	0.124	0.5852								.0444J				0.0533	
Cadmium	<.0025	<.0025	<.0025	<0.000063	<0.000063	<.000063	0.00017J	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	86	60.8		53	56.8	<.0394	53	52	43.1	51.3	42.7	40.7	40.8	48.7	48.3
Chromium	<.010	<.010								0.0353				.0079J	
Cobalt	<.050	<.050								.0232J				.0054J	
Copper	<.025	<.025								0.321				0.0794	
Iron	0.209	<.100		2.46	0.375	<.0109	<.0109	0.115	0.328	70.6	23.2	6.02	7.28	11.7	26.3
Lead	<.005	<.005	<.005	<.0013	<.0013	<.0013	<.0050	.0024J	0.248	0.0863	0.029	0.0287	0.0593	0.1	
Magnesium	6.2	3.69		2.76	3.29	<.0704	3.11	3.63	3.3	7.79	4.04	3.15	3.44	4.39	4.85
Manganese	<.010	<.010		0.0266	<0.00065	<0.00065	<.00065	.0028J	.0043J	0.736	0.23	0.0721	0.0759	0.153	0.274
Nickel	<.040	<.040								.0256J				.0161J	
Potassium	20.6	18.4		17.2	19.6	<.83	14.6	17.2	13.4	14.4	15	13.2	12.6	15	15.9
Selenium	<.010	<.010								<.0100				<.0100	
Silver	<.010	<.010								<.0100				<.0100	
Sodium	83.9	49.6		38.1	39.8	<.075	41.2	46.5	33.4	47.4	38.3	31.9	33	39.4	33.8
Thallium	<.010	<.010								<.0100				<.010	
Vanadium	<.050	<.050								0.0523				.0095J	
Zinc	<.020	<.020								0.181				0.0335	
Mercury	<0.0002									0.00058				<0.00020	
1,1,1,2-Tetrachloroethane	<5.0	<5.0								<1.0				<1.0	
1,1,1-Trichloroethane	<5.0	<5.0								<1.0				<1.0	
1,1,2,2-Tetrachloroethane	<5.0	<5.0								<1.0				<1.0	
1,1,2-Trichloroethane	<5.0	<5.0								<1.0				<1.0	



	Dec_16	Mar_17	Jul_17	Sept_17	9/17dup	Sept17dup	Dec_17	Mar_18	Sept_18	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
1,1-Dichloroethane	<5.0	<5.0							<1.0				<1.0	
1,1-Dichloroethene	<5.0	<5.0							<1.0				<1.0	
1,2,3-Trichloropropane	<5.0	<5.0							<1.0				<1.0	
1,2-Dibromo-3-chloropropane	<5.0	<5.0							<1.0				<1.0	
1,2-Dibromoethane	<5.0	<5.0							<1.0				<1.0	
1,2-Dichlorobenzene	<5.0	<5.0							<1.0				<1.0	
1,2-Dichloroethane	<5.0	<5.0							<1.0				<1.0	
1,2-Dichloropropane	<5.0	<5.0							<1.0				<1.0	
1,4-Dichlorobenzene	<5.0	<5.0							<1.0				<1.0	
2-Butanone	<5.0	<5.0							<5.0				<5.0	
2-Hexanone	<5.0	<5.0							<5.0				<5.0	
4-Methyl-2-pentanone	<5.0	<5.0							<5.0				<5.0	
Acetone	<5.0	<5.0							<5.0				<5.0	
Acrylonitrile	<5.0	<5.0							<1.0				<1.0	
Benzene	<5.0	<5.0							<1.0				<1.0	
Bromochloromethane	<5.0	<5.0							<1.0				<1.0	
Bromodichloromethane	<5.0	<5.0							<1.0				<1.0	
Bromoform	<5.0	<5.0							<1.0				<1.0	
Bromomethane	<5.0	<5.0							<1.0				<1.0	
Carbon disulfide	<5.0	<5.0							<1.0				<1.0	
Carbon tetrachloride	<5.0	<5.0							<1.0				<1.0	
Chlorobenzene	<5.0	<5.0							<1.0				<1.0	
Chloroethane	<5.0	<5.0							<1.0				<1.0	
Chloroform	<5.0	<5.0							<1.0				<1.0	
Chloromethane	<5.0	<5.0							<1.0				<1.0	
cis-1,2-Dichloroethene	<5.0	<5.0							<1.0				<1.0	
cis-1,3-Dichloropropene	<5.0	<5.0							<1.0				<1.0	
Dibromochloromethane	<5.0	<5.0							<1.0				<1.0	
Dibromomethane	<5.0	<5.0							<1.0				<1.0	
Ethanol														
Ethylbenzene	<5.0	<5.0							<1.0				<1.0	
Iodomethane	<5.0	<5.0							<1.0				<1.0	
Isopropyl Alcohol														
Methylene chloride	<5	<5.0							<1.0				<1.0	
Silane, methoxytrimethyl-														
Silanol, trimethyl-		<5.0												
Styrene	<5	null							<1.0				<1.0	
Sulfur dioxide														
Tetrachloroethene	<5.0	<5.0							<1.0				<1.0	
Toluene	<5.0	<5.0							<1.0				<1.0	
trans-1,2-Dichloroethene	<5.0	<5.0							<1.0				<1.0	
trans-1,3-Dichloropropene	<5.0	<5.0							<1.0				<1.0	
trans-1,4-Dichloro-2-butene	<5.0	<5.0							<1.0				<1.0	
Trichloroethene	<5.0	<5.0							<1.0				<1.0	
Trichlorofluoromethane	<5.0	<5.0							<1.0				<1.0	
Trimethylsilyl fluoride														
unknown									9.5J					
Vinyl acetate	<5.0	<5.0							<1.0				<1.0	
Vinyl chloride	<5.0	<5.0							<1.0				<1.0	
Xylene (total)	<5.0	<5.0							<3.0				<3.0	
Cyanide	<10	<10							<10.0				<10	
Total Organic Carbon		1.5	2.2						2.9		1.9	1.8	2.7	
sulfide	<2	<2											<2	
1,4 dioxane								<.2	<2	<.25	.12 J	<0.25	<.2	<.2

	Dec_16	Mar_17	Jul_17	Sept_17	9/17dup	Sept17dup	Dec_17	Mar_18	Sept_18	Dec_18	Mar_19	Jun_19	Sept_19	Dec_19
6:2FTS								170 89		16 J	10 J	9.7	6.5 J	3.1
8:2FTS								<18	ND	ND	ND	ND	ND	ND
NEtFOSAA								<18	ND	ND	ND	ND	ND	ND
NMeFOSAA								<18	ND	ND	ND	ND	ND	ND
PFBS								2.7	2.5	3.4	3.9	4.5	3.1	3.2
PFBA								150 B	57 B	54 B	43	49	47	45
PFDS								<1.8	ND	ND	ND	ND	ND	ND
PFDA								.52 J	1.1 J	1.2 J	1 J	.92 J	1.5 J	1.3
PFDoA								<1.8	ND	ND	ND	ND	ND	ND
PFHpS								.28 J	ND	.36 J	.66 J	.57 J	.69 J	0.48
PFHpA								120	46	55	36	41	59	51
PFHxS								7.8 B	8.2 B	8.3 B	11 B	14 13 B		15
PFNA								4.8	6.4	7.1	8.8	11	11	11
FOSA								<1.8	ND	ND	ND	ND	.45 JB	ND
PFOS								15	19	21	25	27	33	37
PFOA								52	25	28	26	27	30	31
PFTeA								<1.8	ND	Nd	ND	ND	ND	ND
PFTriA								<1.8	ND	ND	ND	ND	ND	ND
PFUnA								2.6	4.3	3.3	2.5	1.9 2.1 I		2.2
PFHxA								430	130	97	67	86	77	76
PFPeA								560	200	150	110	120	120	120

B found in blank  
J <RL >mdl



GM27_Op	GM-27 OP	STV	Dec_12	mar_13	Jun_13	Dec_13	June_14	Oct_2014	Dec_14	March_15	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16
75-34-3	1,1-Dichloroethane	µg/L				<	5.0 U			5.0 U							<5.0
75-35-4	1,1-Dichloroethene	µg/L				<	5.0 U			5.0 U							<5.0
96-18-4	1,2,3-Trichloropropane	µg/L				<	5.0 U			5.0 U							<5.0
96-12-8	1,2-Dibromo-3-chloropropane	µg/L				<	5.0 U			5.0 U							<5.0
106-93-4	1,2-Dibromoethane	µg/L				<	5.0 U			5.0 U							<5.0
95-50-1	1,2-Dichlorobenzene	µg/L				<	5.0 U			5.0 U							<5.0
107-06-2	1,2-Dichloroethane	µg/L				<	5.0 U			5.0 U							<5.0
78-87-5	1,2-Dichloropropane	µg/L				<	5.0 U			5.0 U							<5.0
106-46-7	1,4-Dichlorobenzene	µg/L				<	5.0 U			5.0 U							<5.0
78-93-3	2-Butanone	µg/L				<	5.0 U			5.0 U							<5.0
591-78-6	2-Hexanone	µg/L				<	5.0 U			5.0 U							<5.0
108-10-1	4-Methyl-2-pentanone	µg/L				<	5.0 U			5.0 U							<5.0
67-64-1	Acetone	µg/L					16 5.0 U			3 J							<5.0
107-13-1	Acrylonitrile	µg/L				<	5.0 U			5.0 U							<5.0
71-43-2	Benzene	µg/L				<	5.0 U			5.0 U							<5.0
74-97-5	Bromochloromethane	µg/L				<	5.0 U			5.0 U							<5.0
75-27-4	Bromodichloromethane	µg/L				<	5.0 U			5.0 U							<5.0
75-25-2	Bromoform	µg/L				<	5.0 U			5.0 U							<5.0
74-83-9	Bromomethane	µg/L				<	5.0 U			5.0 U							<5.0
75-15-0	Carbon disulfide	µg/L				<	5.0 U			5.0 U							<5.0
56-23-5	Carbon tetrachloride	µg/L				<	5.0 U			5.0 U							<5.0
108-90-7	Chlorobenzene	µg/L				<	5.0 U			5.0 U							<5.0
75-00-3	Chloroethane	µg/L				<	5.0 U			5.0 U							<5.0
67-66-3	Chloroform	µg/L				<	5.0 U			5.0 U							<5.0
74-87-3	Chloromethane	µg/L				<	5.0 U			5.0 U							<5.0
156-59-2	cis-1,2-Dichloroethene	µg/L				<	5.0 U			5.0 U							<5.0
10061-01-5	cis-1,3-Dichloropropene	µg/L				<	5.0 U			5.0 U							<5.0
124-48-1	Dibromochloromethane	µg/L				<	5.0 U			5.0 U							<5.0
74-95-3	Dibromomethane	µg/L				<	5.0 U			5.0 U							<5.0
	Ethanol	ug/L															
100-41-4	Ethylbenzene	µg/L				<	5.0 U			5.0 U							<5.0
74-88-4	Iodomethane	µg/L				<	5.0 U			5.0 U							<5.0
	Isopropyl Alcohol	ug/L															
75-09-2	Methylene chloride	µg/L				<	5.0 U			5.0 U							<5
	Silane, methoxytrimethyl-	ug/L															
	Silanol, trimethyl-	ug/L															
100-42-5	Styrene	µg/L				<	5.0 U			5.0 U							<5
	Sulfur dioxide	ug/L															
127-18-4	Tetrachloroethene	µg/L				<	5.0 U			5.0 U							<5.0
108-88-3	Toluene	µg/L				<	5.0 U			5.0 U							<5.0
156-60-5	trans-1,2-Dichloroethene	µg/L				<	5.0 U			5.0 U							<5.0
10061-02-6	trans-1,3-Dichloropropene	µg/L				<	5.0 U			5.0 U							<5.0
110-57-6	trans-1,4-Dichloro-2-butene	µg/L				<	5.0 U			5.0 U							<5.0
79-01-6	Trichloroethene	µg/L				<	5.0 U			5.0 U							<5.0
75-69-4	Trichlorofluoromethane	µg/L				<	5.0 U			5.0 U							<5.0
	Trimethylsilyl fluoride	ug/L															
	unknown	ug/L				<											
108-05-4	Vinyl acetate	µg/L				<	5.0 U			5.0 U							<5.0
75-01-4	Vinyl chloride	µg/L				<	5.0 U			5.0 U							<5.0
1330-20-7	Xylene (total)	µg/L				<	5.0 U			5.0 U							<5.0
57-12-5	Cyanide	µg/L				<10	10 U			10.0 U							<10
	Total Organic Carbon	mg/L					29.6 29.3										
	Sulfide																<2
	1,4 dioxane	ug/l															



GM-27 OP	Mar_17 4/19/2017	Jul_17 7/13/2017	Sept_17 9/29/2017	Dec_17 12/20/2017	Mar_18 3/19/2018	3/18Dup 3/19/2018	Sept_18 9/24/2018	Dec_18 12/10/2018	Mar_19 3/20/2019	Jun_19 6/10/2019	Sep_19 9/13/2019	Dec_19 12/27/2019
Analyte												
pH	8.47	6.15	7.26	7.89	7.65		9.15	9.08	8.66	8.83	9.22	3.27
spec cond	1304	82	1815	1371	1423		981	1064	1054	1030	1225	1466
ORP	-207	-90.4	-172.2	-220.9	-194.2		-165.9	-161	-138.3	-149	-170.1	-170.9
DO	0.71	5.49	0.11	0.18	0.2		1.42	1.71	1.3	1.13	3.2	2.33
Temp	14.78	17.14	14.68	14.99	14.51		15.8	11	11.7	14.2	15	12
Turbidity								10.9	22	6.5 D	56.1	18.2
Bromide	2.6	2.3	2.8	2.1	2.4	2.4	2.1	20.7 D	2.5	2.4	1.8	<0.50
Chloride	301 D	811 D	504	319 D	306 D	346 D	368 D	292 D	468 D	442 D	357 D	330 D
Sulfate	<5.0	<b>36.1</b>	17.4	12.7	36.1	32.3	2.7J	12.7J D	<5.0	<5.0	<5.0	<5.0
Nitrogen, Kjeldahl, Total	32.2 D	23.9 D	39.1	34.2 D	26.5 D	36.2 D	38.5 D	37.8 D	36.2 D	33.7 D	42.0 D	41.9 D
Nitrate as N	<0.050	<0.050	<0.014	0.027J	<0.050	<0.050	<0.050	<0.050	0.034J	0.030J	<0.050	<0.050
Nitrite as N	<0.050	<0.050	<0.0020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chemical Oxygen Demand	107	325	130	144	128	134	191	140	196	154	123	147
Phenolics, Total Recoverable	0.0162	0.0184	0.0155	0.0202	0.0155	0.0186	0.0422	0.0223	.0466 D	<.01	.0027J	0.0073
Chromium, Hexavalent	<.1						<0.10 D				<.04	
Color											75	
Alkalinity, Total (As CaCO3)	128	<b>366</b>	257	220	177	218	223	136	424	284	213	211
Hardness (As CaCO3)	170	700	320	320	200	193	130	200	250	180	147	150
Total Dissolved Solids	730	1610	1040	712	732	748	698	644	956	874	722	630
Chloride	301	811 D	504	319	306	346			468 D			330
Nitrogen, Ammonia (As N)	33.6	25.0 D	27.6	30.6 D	30.6 D	31.4 D	34.7 D	34.0 D	29.5 D	32.0 D	35.1	27.1 D
Biochemical Oxygen Demand	15.3	21.9 D	30.6	32.7 D	17.1 D	19.1 D	23.1 D	25.7 D	38.9 D	32.5 D	21.6	27.3 D
Total Organic Carbon	37.7	<b>43.9 D</b>	35.3	31.3	30.5	29.6		35.2	63.2	43.1	39.5	34.5
Aluminum	<.200						0.628				0.77	
Antimony	<.060						<.060				<.060	
Arsenic	<.010						<.010				<.010	
Barium	<.200						.167J				0.219	
Beryllium	<.005						<.005				<.0050	
Boron	0.148						0.156				0.175	
Cadmium	<.0025	0.0025	<0.000063	.0022J	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	51.6	190	105	112	71.3	78	49.6	57.7	72.6	55.5	50.7	45.4
Chromium	0.0167						<.010				<.010	
Cobalt	<.050						<.050				<.050	
Copper	<.025						.0052J				.0079J	
Iron	0.899	35.5	2.62	16.6	2.24	2.54	1.84	1.77	3.37	3.66	3.54	4
Lead	<.005	0.168	<.0013	0.0796	<.0050	<.0050	0.0067	0.0057	0.0088	0.0138	0.0072	0.0148
Magnesium	4.99	33.5	17.4	13.1	9.13	10.2	7.58	8.59	15.3	9.18	8.33	6.68
Manganese	0.0687	0.712	0.188	0.256	0.148	0.168	0.115	0.138	0.214	0.153	0.112	0.0991
Nickel	<.040						.0142J				.0218J	
Potassium	45.8	45.6	47.8	54.9	50.9	55.7	51.1	57.6	44	43.4	55.2	54.2
Selenium	<.010						<.010				<.010	
Silver	<.010						<.010				<.010	
Sodium	115	295	161	130	119	130	138	148	266	200	149	122
Thallium	<.010						<.010				<.010	
Vanadium	<.050						.0036J				<.050	
Zinc	<.020						0.0283				0.0275	
Mercury	<.0002						<0.00020				<0.00020	
1,1,1,2-Tetrachloroethane	<5.0						<1.0				<1.0	
1,1,1-Trichloroethane	<5.0						<1.0				<1.0	
1,1,2,2-Tetrachloroethane	<5.0						<1.0				<1.0	
1,1,2-Trichloroethane	<5.0						<1.0				<1.0	

GM-27 OP	Mar_17	Jul_17	Sept_17	Dec_17	Mar_18	3/18Dup	Sept_18	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
1,1-Dichloroethane	<5.0						<1.0				<1.0	
1,1-Dichloroethene	<5.0						<1.0				<1.0	
1,2,3-Trichloropropane	<5.0						<1.0				<1.0	
1,2-Dibromo-3-chloropropane	<5.0						<1.0				<1.0	
1,2-Dibromoethane	<5.0						<1.0				<1.0	
1,2-Dichlorobenzene	<5.0						<1.0				<1.0	
1,2-Dichloroethane	<5.0						<1.0				<1.0	
1,2-Dichloropropane	<5.0						<1.0				<1.0	
1,4-Dichlorobenzene	<5.0						<1.0				<1.0	
2-Butanone	<5.0						<5.0				<5.0	
2-Hexanone	<5.0						<5.0				<5.0	
4-Methyl-2-pentanone	<5.0						<5.0				<5.0	
Acetone	<5.0						7.9				8.7	
Acrylonitrile	<5.0						<1.0				<1.0	
Benzene	<5.0						0.53J				<1.0	
Bromochloromethane	<5.0						<1.0				<1.0	
Bromodichloromethane	<5.0						<1.0				<1.0	
Bromoform	<5.0						<1.0				<1.0	
Bromomethane	<5.0						<1.0				<1.0	
Carbon disulfide	<5.0						<1.0				<1.0	
Carbon tetrachloride	<5.0						<1.0				<1.0	
Chlorobenzene	<5.0						<1.0				<1.0	
Chloroethane	<5.0						<1.0				<1.0	
Chloroform	<5.0						<1.0				<1.0	
Chloromethane	<5.0						<1.0				<1.0	
cis-1,2-Dichloroethene	<5.0						<1.0				<1.0	
cis-1,3-Dichloropropene	<5.0						<1.0				<1.0	
Dibromochloromethane	<5.0						<1.0				<1.0	
Dibromomethane	<5.0						<1.0				<1.0	
Ethanol												
Ethylbenzene	<5.0						<1.0				<1.0	
Iodomethane	<5.0						<1.0				<1.0	
Isopropyl Alcohol												
Methylene chloride	<5.0						<1.0				<1.0	
Silane, methoxytrimethyl-												
Silanol, trimethyl-												
Styrene	<5.0						<1.0				<1.0	
Sulfur dioxide	null											
Tetrachloroethene	<5.0						<1.0				<1.0	
Toluene	<5.0						<1.0				<1.0	
trans-1,2-Dichloroethene	<5.0						<1.0				<1.0	
trans-1,3-Dichloropropene	<5.0						<1.0				<1.0	
trans-1,4-Dichloro-2-butene	<5.0						<1.0				<1.0	
Trichloroethene	<5.0						<1.0				<1.0	
Trichlorofluoromethane	<5.0						<1.0				<1.0	
Trimethylsilyl fluoride												
unknown	null						25.2J					
Vinyl acetate	<5.0						<1.0				<1.0	
Vinyl chloride	<5.0						<1.0				<1.0	
Xylene (total)	<5.0						<3.0				<3.0	
Cyanide	<10						7.1J				3.4	
Total Organic Carbon		37.7					35.4				39.5	
Sulfide	<2										<2	
1,4 dioxane					0.32	0.31	<2	0.41	0.36	0.32	0.36	0.35

	Mar_17	Jul_17	Sept_17	Dec_17	Mar_18	3/18Dup	Sept_18	Dec_18	Mar_19	Jun_19	Sept_19	Dec_19
GM-27 OP												
6:2FTS					<180	<180	9.6 J	ND	11 J	35	55	52
8:2FTS					<180	<180	5.1 J	ND	3.4 J	4.9 J	4.2 J	3.7
NEtFOSAA					9.5 J	11 J		20	17 J	14 J	15 20 J	18
NMeFOSAA					3.9 J	3.9 J	8.5 J	7.6 J	7.3 J		8.3 9.2 J	7.8
PFBS						18	18	9	8.2	9.5	25	5.6
PFBA					130 B	130 B	200 B	170 B	140		220	130
PFDS					1.2 J	.79 J	ND	ND	ND	ND	ND	ND
PFDA						36	32	46	42	28	38	38
PFDoA					<1.8	<1.8	ND	ND	ND	ND	ND	ND
PFHpS					.81 J	1.1 J	1.5 J	1.8 J	2.1	1.7 J	1.6 J	1.6
PFHpA						84	92	98	92	98	100	110
PFHxS					34 B	35 B	49 B	41 B	45 B		42 38 B	42
PFNA						84	87	110	100	76	100	99
FOSA						8.4	8.4	8.1	7.2	5.1	7.5 7.4 B	7.6
PFOS						110	110	140	130	160	150	150
PFOA						160	160	170	170	200	200	180
PFTeA					<1.8	<1.8	ND	ND	ND	ND	ND	ND
PFTriA					<1.8	<1.8	ND	ND	ND	ND	ND	ND
PFUnA						4.8	4.7	6.7	6.2	4.1	4.8	4.4
PFHxA						150	140	210	160	220 I	180	150
PFPeA						110	100	130	130	120	140	150

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GM271_Op	GM-271 OP	STV	Dec_12	Mar_13	Jun_13	DEC_13	Jun_14	Oct_14	Dec_14	Mar_2015	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16	Mar_17	
Date Collected			1/4/2013	4/9/2013	6/28/2013	3/11/2014	6/30/2014	10/30/2014	1/2/2015	5/15/2015	7/28/2015	10/27/2015	12/10/2015	3/24/2016	6/16/2016	10/6/2016	2/1/2017	4/19/2017	
Date Received			1/4/2013	4/9/2013															
Analyte	Units																		
pH			8.5	7.6	7.81	8.09	7.71	8.79	8.16	8.04	8.04	7.5	7.39	8.33	8.42	8.92	9.29	8.69	
spec cond	umhos_cm	2667	1165	845	1650	1010	790	1089	1432	1453	1442	1498	1524	1171	1328	1206	1188	1301	
ORP			-89	-72	-185.9	-147.8	-121.7	-242.4	-192.7	-121.1	-155	-186.2	-119.9	-210.4	-2331	-209.6	-60.3	-331	
DO	mg/l	1	0.58	0.25	0.48	1.1	0.6	0.36	0.19	1.2	0.47	0.06	0.15	0.89	0.27	0.37	0.45	0.05	
Temp	C		12.88	15.3	14.55	14.22	15.17	14.32	14.04	13.56	13.39	13.98	14.03	13.97	13.99	14.95	14.07	14.1	
Turbidity	NTU		3.0	2.0	14 D	8.1	6.2	2.6	13	15	6.1	6.3	3.3	3.6	3.9				
24959-67-9	Bromide	mg/L	8.5	2.75	0.92	0.9	2.77	1.55	3.44	3.70	3.87	4.56	3.62	4.18	3.19	3.35	3.6	2.5	2.5
16887-00-6	Chloride	mg/L	447.2	255 D	192 D	251 D	324 D	297 D	370	427	433 D	504 D	344 D	406 D	347 D	333 D	363	297 D	284 D
14808-79-8	Sulfate	mg/L	24.9	14.2	7.70	<5	<5	<5.00	<5	<5.	<5.00	<5.00	<5.00	<5.00	<5.00	5.00 U	<5	<5.0	<5.0
	Nitrogen, Kjeldahl, Total	mg/L	9.6	10.7 D	7.12 D	17.7	15.4 D	13.8 D	14.0	16.2	17.6 D	18.8 D	16.4 D	19.1 D	18.6 D	25.2 D	16.9	18.1 D	18.6 D
14797-55-8	Nitrate as N	mg/L	0.18	0.12	0.100 U	<.5	<.1	<0.100	<0.1	<0.1	0.21	<0.1	<0.1	<0.1	<0.10	<0.10	0.74	<0.050	<0.050
14797-65-0	Nitrite as N	mg/L		0.100 U	0.100 U	<.1	<.1	<0.100	<0.1	<0.1	<0.100	<0.1	<0.1	<0.1	<0.10	<0.10	0.74	<0.050	<0.050
	Chemical Oxygen Demand	mg/L	239	38.7	46.6	81.3	54.9	55.9	45.1	50.8	55.6	56.9	54.2	48.5	45.5	80.2	58.8	96.2	83.7
	Phenolics, Total Recoverable	mg/L	0.14	.005 U	.005 U	<.005	<.005	<.005	<.005	<.005	<.005	<.005	12.1	10.2	<.005 U	0.0099	0.0135	0.0062	0.0151
18540-29-9	Chromium, Hexavalent	mg/L				<.02	<0.0200			<0.02							<.02	<.1	
	Color	units				65	75.0 D			90.0 D								40	
	Alkalinity, Total (As CaCO3)	mg/L	309	138 D	157 D	253 D	202 D	165 D	136	185	142 D	103	56.5 D	136 D	162	157	134	148	134
	Hardness (As CaCO3)	mg/L	565	300 D	240 D	370 D	290 D	280 D	440	550	400 D	320 D	300 D	276 D	228 D	280 D	250	190	250
	Total Dissolved Solids	mg/L	1246	798 D	506	786 D	700 D	1010	944	844	1370	2650	932	1.02	740 D	972	874	750	824
	Chloride	mg/L	447.2			324 D		297	370	427	433 D	504	344	406	347	333	363	297	284
7664-41-7	Nitrogen, Ammonia (As N)	mg/L	8.5	8.00 D	6.94 D	13.4 D	11.7 D	12.5 D	13.6	16.8	17.1 D	19.9 D	10.3 D	18.0 D	22.5 D	21.2 D	21.8	18.5 D	18.4
	Biochemical Oxygen Demand	mg/L	79.4	31	21	27	25	20	22	<2	23	25	23	<4.	<2.00	16	2.5	2	17.4
	Total Organic Carbon		30.2		30.1 D	23.2	21.9	48.0	68.0	16	17.4	15.4		13.8	17.4	20.8		18.2	20.9
7429-90-5	Aluminum	mg/L	4.9	0.426		0.697	0.837	<.200	<.2	.190 B	.185 B	.0424 B		.0517 J		2.51	<.200	<.200	
7440-36-0	Antimony	mg/L		.060 U		<1.9	<.06	<.06	<.06	<.0018	<.0018	<.0006		<.060	<.060		<.060	<.060	
7440-38-2	Arsenic	mg/L	0.007	.010 U		.0027 B	<.01	<.01	<.01	.0045 B	.0028 B	<.0022		<.010	<.010		<.010	<.010	
7440-39-3	Barium	mg/L	0.19	.200 U		.108 B	<.2	<.2	<.2	.128 B	.121 B	.103 B		.102 J	.110 J		<.200	<.200	
7440-41-7	Beryllium	mg/L		.005 U		<.00014	<.0005	<.0005	<.0005	<.0001	<.00020	<.0002		<.0005	<.00050		<.0005	<.0005	
7440-42-8	Boron	mg/L		0.135		0.158	0.146			0.138							0.14	0.139	
7440-43-9	Cadmium	mg/L	0.02	.005 U	.0001 U	.0001 U	.0003 B	<.005	<.005	<.005	.00040 B	.00030 B	<.0001	<.0001	<.0025	<.0025	<.0025	<.0025	<.0025
7440-70-2	Calcium	mg/L	198	108	75.5	90.7	119	124	111	120	142	133	109	111	96.400 E	110	92.2	73.4	76.8
7440-47-3	Chromium	mg/L	0.02	.010 U		.0038 B	<.01	<.01	<.01	<.0016	.0016 B	.0011 B		<.010	.0057 J		<.010	<.010	
7440-48-4	Cobalt	mg/L		.050 U		.0009 B	<.05	<.05	<.05	<.0003	<.0002	<.00002		<.050	.0014 J		<.050	<.050	
7440-50-8	Copper	mg/L	0.005	.025 U		.0029 B	<.025	<.025	<.025	.0019 B	.0031 B	.0007 B		.0010 J	.0112 J		<.025	<.025	
7439-89-6	Iron	mg/L	9.4	1.5	0.928	5.78	2.57	2.84	1.1	2.74	2.66	1.62	0.796	0.702	1.52	4.64	0.511	0.266	0.719
7439-92-1	Lead	mg/L	0.047	0.006	.0028 B	0.0113	0.0207	0.0134	<.005	<.005	0.0035	.0025 B	.0029 B	.0016 B	.0015 J	0.0271	<.005	<.005	<.005
7439-95-4	Magnesium	mg/L	19	5.73	5.75	13.8	8.27	8.46	6.92	8.14	9.11	8.75	7.06	7.03	6.650 E	7.47	4.98	4.22	4.85
7439-96-5	Manganese	mg/L	0.33	0.125	0.0955	0.163	0.209	0.204	0.121	0.176	0.185	0.15	0.12	0.112	0.119	0.194	0.0748	.056.0	0.0793
7440-02-0	Nickel	mg/L	0.008	.040 U		.004 B	<.04	<.04	<.04	.0036 B	.0034 B	.0027 B		.0037 J	.0061 J		<.040	<.040	
7440-09-7	Potassium	mg/L	47	29.3	23.1	28.1	34	37.5	36.1	37	39.8	44.9	39.4	43.8	39	37.3	34.2	37	35
7782-49-2	Selenium	mg/L		.005 U		.0018 B	<.0005	<.01	<.01	<.0022	<.0029	<.0022		<.010	<.010		<.010	<.010	
7440-22-4	Silver	mg/L		.010 U		<.00043	<.01	<.01	<.01	.0026 B	<.0018	<.0005		<.010	<.010		<.010	<.010	
7440-23-5	Sodium	mg/L	173.1	81.600	76.1	133	104	145	130	143	174	149	127	131	119.000 E	126	109	112	115
7440-28-0	Thallium	mg/L		.010 U		<.0013	<.01	<.01	<.01	<.0027	<.0023	<.0019		<.010	<.010		<.010	<.010	
7440-62-2	Vanadium	mg/L	0.01	.050 U		.0023 B	<.05	<.05	<.05	<.0005	.0012 B	<.0028		<.050	.0058 J		<.050	<.050	
7440-66-6	Zinc	mg/L	0.19	.020 U		0.0426	0.0374	<.02	<.02	.0116 B	0.033	.0068 B		<.020	0.0432		<.020	<.020	
7439-97-6	Mercury	mg/L	0.0004	0.0002 U		<.0001	<.0002	<.0002	<.0002	<.0001	<.0001	<.0001		<.0002 UN	<.00020		<.0002	<.00020	
630-20-6	1,1,1,2-Tetrachloroethane	µg/L				<	5.0 U			5.0 U							<5.0	<5.0	
71-55-6	1,1,1-Trichloroethane	µg/L				<	5.0 U			5.0 U							<5.0	<5.0	
79-34-5	1,1,2,2-Tetrachloroethane	µg/L				<	5.0 U			5.0 U							<5.0	<5.0	
79-00-5	1,1,2-Trichloroethane	µg/L				<	5.0 U			5.0 U							<5.0	<5.0	



GM271_Op	GM-271 OP	STV	Dec_12	Mar_13	Jun_13	DEC_13	Jun_14	Oct_14	Dec_14	Mar_2015	June_15	Sept_15	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16	Mar_17
	6:2FTS																	
	8:2FTS																	
	NEtFOSAA																	
	NMeFOSAA																	
	PFBS																	
	PFBA																	
	PFDS																	
	PFDA																	
	PFDoA																	
	PFHpS																	
	PFHpA																	
	PFHxS																	
	PFNA																	
	FOSA																	
	PFOS																	
	PFOA																	
	PFTeA																	
	PFTriA																	
	PFUnA																	
	PFHxA																	
	PFPeA																	

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GM-27I OP	Jul_17 7/13/2017	Sept_17 9/29/2017	Dec_2017 12/20/2017	Mar_2018 3/19/2018	Sept_2018 9/24/2018	Dec_18 12/10/2018	Dec18Dup 12/10/2018	Mar_19 3/20/2019	Mar19DUP 3/20/2019	19-Jun	Sep_19 9/13/2019	Dec_19 12/27/2019	
Analyte													
pH	7.51	8.03	8.75	8.37	9.07	8.33		8.35		9.26	9.14	8.98	
spec cond	1329	1255	1140	1654	957	1102		1065		1040	1156	1394	
ORP	-106.3	-253.6	-314.3	-290	-164.4	-121.6		-125.5		-171.1	-165.2	-155.4	
DO	5.37	0.27	0.25	0.18	2.46	3.36		4.1		0	2.03	4.31	
Temp	14.35	14.07	14	14.02	16.2	9.9		11.5		13.9	14.8	13	
Turbidity						74.0 D		63.5	27	23.0 D	49.4	11.3	
Bromide	2.6	3.5	2.4	2.4	1.8	1.8		1.8	1.5	1.4	2.0	1.6	<0.50
Chloride	420 D	381	300 D	<2.0	357 D	920 D	491 D	343 D	340 D	424 D	471 D	317 D	
Sulfate	<5.0	<0.21	2.0J	0.92J	2.7J	2.4J	3.0 J	9.3	9.9	<5.0	<5.0	3.6J	
Nitrogen, Kjeldahl, Total	13.0 D	30.4	19.1 D	21.8 D	18.2 D	21.7 D	21.5 D	12.8 D	10.1 D	19.3 D	23.5 D	13.9 D	
Nitrate as N	<0.050	<0.014	0.015J	<0.050	<0.050	<0.050	<.05	0.086	0.063	0.044J	0.042J	0.064	
Nitrite as N	<0.050	<0.0020	<0.050	<0.050	<0.050	<0.050	<.05	<0.050	<0.050	<0.050	<0.050	<0.050	
Chemical Oxygen Demand	96.2	86.0	74.8	102	109	124		128	72.0	52.1	83.0	109	87.4
Phenolics, Total Recoverable	0.0078	0.0105	0.0096	0.0096	0.0179	0.0146	0.0156	0.012	0.0131	<.01	.0026J	<.005	
Chromium, Hexavalent					<0.10 D						<.04		
Color												75	
Alkalinity, Total (As CaCO3)	176	199	228	148	169	205		206	183	196	200	208	171
Hardness (As CaCO3)	300	220	173	320	190	350		300	160	180	190	240	200
Total Dissolved Solids	694	810	630	982	680	1060		1030	736	648	900	852	596
Chloride	420 D		381	300	<.2	357			343 D				
Nitrogen, Ammonia (As N)	14.5 D	18.3	20.4 D	20.3 D	16.1 D	20.1 D	20.3 D	11.0 D	9.8 D	17.5 D		19.7	12.6 D
Biochemical Oxygen Demand	12.1 D	31.3	21.0 D	21.3 D	22.1 D	24.6 D	25.9 D	17.1 D	19.5 D	21.7 D		19.8	28.5 D
Total Organic Carbon	19.1	21.6	18.9	23.1		19.3	27.6	27.1	23.3	17.7	25.5		22.6
Aluminum					6.62						1.37		
Antimony					<.0600						<.060		
Arsenic					<.0100						<.010		
Barium					.0965J						.0992J		
Beryllium					<.0050						<.0050		
Boron					0.135						0.16		
Cadmium	<.0025	<.000063	<.0025	<.0025	0.00034J	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	86.4	82.6	71	114	72.6	124	126	63.2	70.6	72.8	91.5	57.7	
Chromium					.0075J						<.0100		
Cobalt					.0035J						<.050		
Copper					.0180J						.0101J		
Iron	1.12	0.744	0.407	5.39	8.46	8.33	7.89	2.75	2.98	1.92	4.81	3.18	
Lead	<.0050	<.0013	<.0050	<.0050	0.0647	0.0144	0.011	0.0053	.0042J	<.0050	0.0161	0.0152	
Magnesium	5.46	5.62	4.27	7.93	4.86	8.6	8.71	4.47	5.07	4.68	7.38	3.36	
Manganese	0.0911	0.0739	0.0633	0.206	0.29	0.306	0.299	0.12	0.179	0.0859	0.173	0.104	
Nickel					.0079J						.0145J		
Potassium	36.6	42.3	41.5	40.3	33.4	40.2	40.6	16.2	21.3	38.7	44.7	29.7	
Selenium					<.0100						<.010		
Silver					<.0100						<.010		
Sodium	112	116	115	157	125	225	228	144	164	175	194	109	
Thallium					<.0100						<.010		
Vanadium					.0120J						<.050		
Zinc					0.0936						0.0359		
Mercury					<.00020						<.00020		
1,1,1,2-Tetrachloroethane					<1.0						<1.0		
1,1,1-Trichloroethane					<1.0						<1.0		
1,1,2,2-Tetrachloroethane					<1.0						<1.0		
1,1,2-Trichloroethane					<1.0						<1.0		

GM-27I OP	Jul_17	Sept_17	Dec_2017	Mar_2018	Sept_2018	Dec_18	Dec18Dup	Mar_19	Mar19DUP	19-Jun	Sep_19	Dec_19
1,1-Dichloroethane					<1.0						<1.0	
1,1-Dichloroethene					<1.0						<1.0	
1,2,3-Trichloropropane					<1.0						<1.0	
1,2-Dibromo-3-chloropropane					<1.0						<1.0	
1,2-Dibromoethane					<1.0						<1.0	
1,2-Dichlorobenzene					<1.0						<1.0	
1,2-Dichloroethane					<1.0						<1.0	
1,2-Dichloropropane					<1.0						<1.0	
1,4-Dichlorobenzene					<1.0						<1.0	
2-Butanone					<5.0						<5.0	
2-Hexanone					<5.0						<5.0	
4-Methyl-2-pentanone					<5.0						<5.0	
Acetone					4.4J						<5.0	
Acrylonitrile					<1.0						<1.0	
Benzene					<1.0						<1.0	
Bromochloromethane					<1.0						<1.0	
Bromodichloromethane					<1.0						<1.0	
Bromoform					<1.0						<1.0	
Bromomethane					<1.0						<1.0	
Carbon disulfide					<1.0						<1.0	
Carbon tetrachloride					<1.0						<1.0	
Chlorobenzene					<1.0						<1.0	
Chloroethane					<1.0						<1.0	
Chloroform					<1.0						<1.0	
Chloromethane					<1.0						<1.0	
cis-1,2-Dichloroethene					<1.0						<1.0	
cis-1,3-Dichloropropene					<1.0						<1.0	
Dibromochloromethane					<1.0						<1.0	
Dibromomethane					<1.0						<1.0	
Ethanol												
Ethylbenzene					<1.0						<1.0	
Iodomethane					<1.0						<1.0	
Isopropyl Alcohol												
Methylene chloride					<1.0						<1.0	
Silane, methoxytrimethyl-												
Silanol, trimethyl-												
Styrene					<1.0						<1.0	
Sulfur dioxide												
Tetrachloroethene					<1.0						<1.0	
Toluene					<1.0						<1.0	
trans-1,2-Dichloroethene					<1.0						<1.0	
trans-1,3-Dichloropropene					<1.0						<1.0	
trans-1,4-Dichloro-2-butene					<1.0						<1.0	
Trichloroethene					<1.0						<1.0	
Trichlorofluoromethane					<1.0						<1.0	
Trimethylsilyl fluoride												
unknown					15.1J							
Vinyl acetate					<1.0						<1.0	
Vinyl chloride					<1.0						<1.0	
Xylene (total)					<3.0						<3.0	
Cyanide					<10.0							3.4
Total Organic Carbon												31.3
sulfide					19.3							1.6
1,4 dioxane				0.29	<2	0.42	0.4	.26 J	.16 J	0.26	0.34	0.26

GM-27I OP	Jul_17	Sept_17	Dec_2017	Mar_2018	Sept_2018	Dec_18	Dec18Dup	Mar_19	Mar19DUP	19-Jun	Sep_19	Dec_19
6:2FTS				19	72	66 J			11 J	90	69	35
8:2FTS				<180	3.2 J	ND			ND	3.6 J	3.6 J	3.2
NEtFOSAA				11 J	15 J	13 J			3.7 J	14	17 J	16
NMeFOSAA				<18	4 J	4 J			ND	4.5	5.8 J	4.2
PFBS				12	7.2	6.9			3.9	18	7	6
PFBA				110 B	75 B	100 B			58	130	92	50
PFDS				<1.8	ND	ND			ND	ND	ND	ND
PFDA				24	25	22			7.8	24	29	22
PFDoA				<1.8	ND	ND			ND	ND	ND	ND
PFHpS				.88 J	1.3 J	ND			ND	1.2 J	1.4 J	ND
PFHpA				69	37	65			43	62	82	48
PFHxS				28 B	22 B	34 B			19 B	27	29 B	22
PFNA				56	43	59			28	53	63	35
FOSA				5.2	4.5	4.3			1.3 J	4.5	5.3 B	3.5
PFOS				80	71	92			48	88	110	69
PFOA				120	70	110			74	110	120	77
PFTeA				<1.8	ND	ND			ND	ND	ND	ND
PFTriA				<1.8	ND	ND			ND	ND	ND	ND
PFUnA				4.7	6.4	5.1			2	6.2	7.1	8.6
PFHxA				100	80	100			58	99	110	63
PFPeA				86	69	110			55	100	110	74

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J <RL >mdl







GM28_Op	GM-28 OP	STV	Dec_12	Mar_13	Jun_13	Dec_13	June_14	Oct_14	Dec_14	Mar_2015	June_2015	Sept_15	Dec_15	Mar_16	16-Jun	Sept_16	Dec_16
	6:2FTS	ng/l															
	8:2FTS	ng/l															
	NEtFOSAA	ng/l															
	NMeFOSAA	ng/l															
	PFBS	ng/l															
	PFBA	ng/l															
	PFDS	ng/l															
	PFDA	ng/l															
	PFDaA	ng/l															
	PFHpS	ng/l															
	PFHpA	ng/l															
	PFHxS	ng/l															
	PFNA	ng/l															
	FOSA	ng/l															
	PFOS	ng/l															
	PFOA	ng/l															
	PFTeA	ng/l															
	PFTriA	ng/l															
	PFUnA	ng/l															
	PFHxA	ng/l															
	PFPeA	ng/l															

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J <RL >mdl

GM-28 OP

Mar\_17 Jun\_17 Sept\_17 Dec\_17 Mar\_2018 Sept\_2018 Dec\_18 Mar\_19 Jun\_19 Sep\_19 Dec\_19  
 4/19/2017 7/20/2017 9/26/2017 12/20/2017 3/19/2018 9/24/2018 12/10/2018 3/20/2019 6/10/2019 9/13/2019 12/27/2019

Analyte	Units	Mar_17	Jun_17	Sept_17	Dec_17	Mar_2018	Sept_2018	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
pH		7.98	5.64	7.19	7.65	7.01	8.03	7.93	7.78	7.89	8.31	8.03
spec cond	umhos_cm	1011	75	2158	1967	1840	943	1001	982	982	991	989
ORP		-350.6	-97.8	-127.9	-228.3	-76	-109.6	-101.9	-95	-100	-123.3	-107.2
DO	mg/l	0.03	1.41	0.3	0.24	0.49	0	3.61	3.14	0	2.44	2.94
Temp	C	16.81	15.89	17.25	17.73	17.51	17.7	14.1	14.4	16.2	14.7	14.9
Turbidity	NTU							52.0 D	13	65.0 D	55.2	123 D
Bromide	mg/L	1.4	2.0	2.3	1.8	0.71	1.6	1.6	1.0	1.3	1.3	1.7
Chloride	mg/L	183 D	422 D	398	322 D	141 D	352 D	259 D	217 D	256 D	303 D	318 D
Sulfate	mg/L	46.5	111 D	37.7	53.1 D	652 D	201 D	117 D	<5.0	216 D	79.6 D	7.2
Nitrogen, Kjeldahl, Total	mg/L	5.9 D	45.4 D	55.3	36.8 D	9.3	34.4 D	28.0 D	10.8 D	20.9 D	32.3 D	38.6 D
Nitrate as N	mg/L	<0.050	<0.050	<0.014	<b>0.52</b>	6.3 D	<0.050	<0.050	0.022J	0.042J	0.019J	<0.050
Nitrite as N	mg/L	<0.050	<0.050	<0.0020	<0.050	0.62	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chemical Oxygen Demand	mg/L	38.0	169	164	142	62.1	175	136	107	109	136	147
Phenolics, Total Recoverable	mg/L	0.0198	<.0050	0.0096	0.0128	.0047J	29.2	0.0151	0.0125	<.01	.0027J	.0033J
Chromium, Hexavalent	mg/L	<.1					<0.10 D				<0.040 D	
Color	units										125 D	
Alkalinity, Total (As CaCO3)	mg/L	119	373	658	524	269	705	569	1060	984	809	902
Hardness (As CaCO3)	mg/L	260	440	400	180	580	470	430	1240	880	600	900
Total Dissolved Solids	mg/L	555	1360	1230	1150	1370	1330	1090	1670	1530	1360	1320
Chloride	mg/L	183	422 D	398	322	141	352					
Nitrogen, Ammonia (As N)	mg/L	6.2	29.6	34.8	34.6 D	8.7 D	17.4 D	25.3 D	8.8 D	18.2 D	28.3 D	23.5 D
Biochemical Oxygen Demand	mg/L	8.1	13.3	30.2	17.0 D	<4.0 D	23.8 D	11.1 D	4.4 D	11.9 D	9.4 D	9.6 D
Total Organic Carbon		7.7	36.7 D	47.3	43.6	15.7		34.3	33.5	35.9		35.7
Aluminum	mg/L	<.200					0.563				0.69	
Antimony	mg/L	<.060					<.0600				<.060	
Arsenic	mg/L	0.0119					<.0100				<.0100	
Barium	mg/L	<.200					.0940J				.136J	
Beryllium	mg/L	<.0050					<.0050				0.000078J	
Boron	mg/L	0.0882					0.236				0.396	
Cadmium	mg/L	<.0025	<.0025	<0.000063	0.00027J	<.0025	0.00020J	.00018 J	<.0025	<.0025	<.0025	<.0025
Calcium	mg/L	58.9	200	136	109	262	167	157	384	248	213	187
Chromium	mg/L	<.010					<.0100				<.010	
Cobalt	mg/L	<.050					.0018J				.0044J	
Copper	mg/L	<.025					.0059J				.0136J	
Iron	mg/L	4.54	14.2	3.2	2.13	8.11	4.66	5.91	13.5	8.54	7.68	12.9
Lead	mg/L	<.005	0.0356	<.0013	.0031J	<.0050	0.0054	0.0114	0.0095	0.0109	0.0167	0.0077
Magnesium	mg/L	4.52	27.9	15.5	10.8	39.4	22	23	80.3	54.4	43.4	39.7
Manganese	mg/L	0.955	1.69	1.2	0.586	1.27	0.936	1.03	2.74	1.67	1.38	1.2
Nickel	mg/L	<.040					.0057J				.0215J	
Potassium	mg/L	56.2	76.1	87.4	96.2	57.4	48.6	59.2	58.2	51.2	66.7	87.3
Selenium	mg/L	<.010					<.0100				<.010	
Silver	mg/L	<.010					<.0100				<.010	
Sodium	mg/L	85.8	262	239	234	83	236	206	197	186	210	187
Thallium	mg/L	<.010					<.0100				<.0100	
Vanadium	mg/L	<.050					.0026J				<.050	
Zinc	mg/L	<.020					0.0431				0.108	
Mercury	mg/L	<0.0002					<0.00020				<0.00020	
1,1,1,2-Tetrachloroethane	µg/L	<5.0					<1.0				<1.0	
1,1,1-Trichloroethane	µg/L	<5.0					<1.0				<1.0	
1,1,2,2-Tetrachloroethane	µg/L	<5.0					<1.0				<1.0	
1,1,2-Trichloroethane	µg/L	<5.0					<1.0				<1.0	

GM-28 OP		Mar_17	Jun_17	Sept_17	Dec_17	Mar_2018	Sept_2018	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
1,1-Dichloroethane	µg/L	<5.0					<1.0				<1.0	
1,1-Dichloroethene	µg/L	<5.0					<1.0				<1.0	
1,2,3-Trichloropropane	µg/L	<5.0					<1.0				<1.0	
1,2-Dibromo-3-chloropropane	µg/L	<5.0					<1.0				<1.0	
1,2-Dibromoethane	µg/L	<5.0					<1.0				<1.0	
1,2-Dichlorobenzene	µg/L	<5.0					<1.0				<1.0	
1,2-Dichloroethane	µg/L	<5.0					<1.0				<1.0	
1,2-Dichloropropane	µg/L	<5.0					<1.0				<1.0	
1,4-Dichlorobenzene	µg/L	<5.0					<1.0				<1.0	
2-Butanone	µg/L	<5.0					<5.0				<5.0	
2-Hexanone	µg/L	<5.0					<5.0				<5.0	
4-Methyl-2-pentanone	µg/L	<5.0					<5.0				<5.0	
Acetone	µg/L	<5.0					7.5				3.7J	
Acrylonitrile	µg/L	<5.0					<1.0				<1.0	
Benzene	µg/L	<5.0					<1.0				<1.0	
Bromochloromethane	µg/L	<5.0					<1.0				<1.0	
Bromodichloromethane	µg/L	<5.0					<1.0				<1.0	
Bromoform	µg/L	<5.0					<1.0				<1.0	
Bromomethane	µg/L	<5.0					<1.0				<1.0	
Carbon disulfide	µg/L	<5.0					<1.0				<1.0	
Carbon tetrachloride	µg/L	<5.0					<1.0				<1.0	
Chlorobenzene	µg/L	<5.0					<1.0				<1.0	
Chloroethane	µg/L	<5.0					<1.0				<1.0	
Chloroform	µg/L	<5.0					<1.0				<1.0	
Chloromethane	µg/L	<5.0					<1.0				<1.0	
cis-1,2-Dichloroethene	µg/L	<5.0					<1.0				<1.0	
cis-1,3-Dichloropropene	µg/L	<5.0					<1.0				<1.0	
Dibromochloromethane	µg/L	<5.0					<1.0				<1.0	
Dibromomethane	µg/L	<5.0					<1.0				<1.0	
Ethanol	ug/L											
Ethylbenzene	µg/L	<5.0					<1.0				<1.0	
Iodomethane	µg/L	<5.0					<1.0				<1.0	
Isopropyl Alcohol	ug/L											
Methylene chloride	µg/L	<5.0					<1.0				<1.0	
Silane, methoxytrimethyl-	ug/L											
Silanol, trimethyl-	ug/L											
Styrene	µg/L	<5.0					<1.0				<1.0	
Sulfur dioxide	ug/L	63.8										
Tetrachloroethene	µg/L	<5.0					<1.0				<1.0	
Toluene	µg/L	<5.0					<1.0				<1.0	
trans-1,2-Dichloroethene	µg/L	<5.0					<1.0				<1.0	
trans-1,3-Dichloropropene	µg/L	<5.0					<1.0				<1.0	
trans-1,4-Dichloro-2-butene	µg/L	<5.0					<1.0				<1.0	
Trichloroethene	µg/L	<5.0					<1.0				<1.0	
Trichlorofluoromethane	µg/L	<5.0					<1.0				<1.0	
Trimethylsilyl fluoride	ug/L											
unknown	ug/L	null					9.7J					
Vinyl acetate	µg/L	<5.0					<1.0				<1.0	
Vinyl chloride	µg/L	<5.0					<1.0				<1.0	
Xylene (total)	µg/L	<5.0					<3.0				<3.0	
Cyanide	µg/L	<10.0					<10.0				2.3J	
Total Organic Carbon	mg/L	7.7					39.6 D				42.8	
Sulfide		<2.0									<2.0	
1,4 dioxane	ug/l					<.2	1.2	0.74	0.24	0.38	0.69	0.72

		Mar_17	Jun_17	Sept_17	Dec_17	Mar_2018	Sept_2018	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19	
GM-28 OP													
6:2FTS	ng/l					<180	27 F1	31 J	7.4 J		12 18 J F1	23	
8:2FTS	ng/l					<180	6.4 J	ND	2.3 J	5.7 J	6.3 J	6.6	
NEtFOSAA	ng/l					<18	11 J	15 J	ND		4.5 7.6 J	3.9	
NMeFOSAA	ng/l					<18	3.8 J	5.1 J	ND	1.8 J	ND	ND	
PFBS	ng/l						23 19 F1	13	22		39	14	22
PFBA	ng/l					59 B	270 B	160 B	81		140	110	110
PFDS	ng/l					<1.8	ND	ND	ND	ND	ND	ND	
PFDA	ng/l						8.3	20	15		22	24	22
PFDoA	ng/l					<1.8	.67 J	.8 J	ND	ND	ND	ND	
PFHpS	ng/l					1.6 J		2.8	3.9		4.7	5.4	5.7
PFHpA	ng/l						61 140 F1	110 F1	130		130	150	130
PFHxS	ng/l					35 B	110 B	86 B	140 B		120 110 B		130
PFNA	ng/l						18	45	57		67	70	81
FOSA	ng/l					1.3 J		4.4	.68 J		3.7 5.1 B		1.9
PFOS	ng/l						100	170	150		190	220	270
PFOA	ng/l						200	300			350	320	340
PFTeA	ng/l					<1.8	ND	.37 J	.33 JB	ND	ND	ND	
PFTriA	ng/l					<1.8	ND	ND	ND	ND	ND	ND	
PFUnA	ng/l						3.3	6.3	4.8		6.3	9.1	8.6
PFHxA	ng/l						71	220	160		170	170	170
PFPeA	ng/l							210	180		180	170	180

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J <RL >mdl





GM28I_Op	GM-28I OP	STV	Dec_12	Mar_13	Jun_13	DEC_13	Jun_14	Oct_14	Dec_14	Mar_15	June_2015	Sept_2015	Dec_15	Mar_16	Jun_16	Sept_16	Dec_16
	6:2FTS																
	8:2FTS	ng/l															
	NEtFOSAA	ng/l															
	NMeFOSAA	ng/l															
	PFBS	ng/l															
	PFBA	ng/l															
	PFDS	ng/l															
	PFDA	ng/l															
	PFDoA	ng/l															
	PFHpS	ng/l															
	PFHpA	ng/l															
	PFHxS	ng/l															
	PFNA	ng/l															
	FOSA	ng/l															
	PFOS	ng/l															
	PFOA	ng/l															
	PFTeA	ng/l															
	PFTriA	ng/l															
	PFUnA	ng/l															
	PFHxA	ng/l															
	PFPeA	ng/l															

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GM-28I OP

Mar\_17 Jul\_17 Sept\_17 Dec\_17 mar\_2018 Sept\_18 Dec\_18 Mar\_19 Jun\_19 Sep\_19 Dec\_19  
 4/19/2017 7/17/2017 9/26/2017 12/20/2017 Sep-18 9/24/2018 12/10/2018 3/20/2019 6/10/2019 9/13/2019 12/27/2019

Analyte	Units	Mar_17	Jul_17	Sept_17	Dec_17	mar_2018	Sept_18	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
pH		7.7	6.95	7.6	7.69	8.09	8.48	9.34	9.46	9.25	9.65	9.65
spec cond	umhos_cm	<b>1917</b>	936	802	849	936	967	965	978	959	1052	889
ORP		-253.2	-167	-322.5	-310.6	-245.6	-131.3	-175.6	-187.2	-171.9	-189.4	-191.1
DO	mg/l	0.05	<b>4.41</b>	0.05	0.14	0.19	0.47	1.01	2.44	0.96	1.8	1.03
Temp	C	17.21	17.4	16.96	16.8	16.93	16.6	15.7	14.7	16.7	14.8	15.4
Turbidity	NTU							40.1 D	8.9	20.0 D	31.5	22.4 D
Bromide	mg/L	1.7	1.6	1.3	1.3	1.3	0.91	1.1	1.4	1.7	0.95	0.92
Chloride	mg/L	<b>299 D</b>	<b>261 D</b>	<b>215</b>	<b>187 D</b>	215 D	172 D	174 D	248 D	251 D	235 D	183 D
Sulfate	mg/L	75.0 D	14.3	37.1	46.5	60.4 D	48.7	28.9	15.2	31.5	64.9 D	50.0
Nitrogen, Kjeldahl, Total	mg/L	31.3 D	5.7 D	9.2	4.3 D	8.0	24.8 D	32.5 D	3.8 D	12.2 D	13.0 D	7.1 D
Nitrate as N	mg/L	<0.050	<0.050	<0.014	0.020J	<0.050	<0.050	<0.050	0.051	0.029J	<0.050	<0.050
Nitrite as N	mg/L	<0.050	<0.050	<0.0020	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chemical Oxygen Demand	mg/L	140	73.3	37.3	26.2	34.7	76.8	53.4	21.2	45.5	21.2	49.9
Phenolics, Total Recoverable	mg/L	.0574 D	0.0199	0.0123	0.0074	0.0146	24.0	0.0095	0.0136	<.01	.0027J	<.005
Chromium, Hexavalent	mg/L	<0.10					<0.20 D				<0.020	
Color	units										40.0	
Alkalinity, Total (As CaCO3)	mg/L	<b>371</b>	135	116	110	104	117	95.9	103	149	167	120
Hardness (As CaCO3)	mg/L	<b>390</b>	132	140	127	113	120	96.0	92.0	100	147	110
Total Dissolved Solids	mg/L	<b>1010</b>	481	468	442	543	460	498	464	596	542	482
Chloride	mg/L		299 261 D		215	187						
Nitrogen, Ammonia (As N)	mg/L	<b>31.2</b>	7.8 D	5.4	3.6 D	7.1 D	6.8 D	12.3 D	7.3 D	11.4 D	9.7 D	3.7 D
Biochemical Oxygen Demand	mg/L	21.7	8.4 D	9.5	6.7 D	9.4 D	16.2 D	13.3 D	12.1 D	13.3 D	10.7 D	10.1 D
Total Organic Carbon		<b>43.4</b>	9.7	7.1	6.0	7.1		7.4	4.3	12.7	13.3	7.1
Aluminum	mg/L	<.200					2.42				1.08	
Antimony	mg/L	<.060					<.0600				<.0600	
Arsenic	mg/L	<.010					0.0138				0.0113	
Barium	mg/L	<.200					.0635J				.0870J	
Beryllium	mg/L	<.005					<.0050				0.000093J	
Boron	mg/L	0.189					0.0814				0.188	
Cadmium	mg/L	<.0025	<.0025	<0.000063	.00070J	<.0025	0.00020J	<.0025	<.0025	<.0025	<.0025	<.0025
Calcium	mg/L	<b>111</b>	44	45.9	53.2	49.2	41.5	35.5	35.3	39.6	53	36.7
Chromium	mg/L	0.0675					<.0100				<.010	
Cobalt	mg/L	<.050					.0016J				<.050	
Copper	mg/L	<.025					.0104J				.0090J	
Iron	mg/L	4.32	5.38	5.37	<b>7.84</b>	1.9	8.65	4.19	2.94	4.07	5.8	3.14
Lead	mg/L	<.005	<.0050	<1.3	<.0050	<.0050	0.0204	0.0095	0.0052	0.0146	0.0121	0.0052
Magnesium	mg/L	<b>11.8</b>	3.54	3.965	4.3	4.4	3.55	2.65	2.58	4.31	6.31	2.61
Manganese	mg/L	<b>0.951</b>	<b>0.956</b>	<b>1.04</b>	<b>1.37</b>	0.426	0.778	0.487	0.32	0.292	0.341	0.201
Nickel	mg/L	0.0422					.0059J				.0145J	
Potassium	mg/L	60	58	47.7	49.8	57.5	40.5	54.4	42.7	62.6	69.9	47.7
Selenium	mg/L	<.010					<.0100				<.010	
Silver	mg/L	<.010					<.0100				<.010	
Sodium	mg/L	<b>219</b>	92.2	78.3	84.8	92.9	85.2	88.5	85.2	114	102	74.8
Thallium	mg/L	<.010					<.0100				<.010	
Vanadium	mg/L	<.050					.0064J				<.050	
Zinc	mg/L	<.020					0.0519				0.051	
Mercury	mg/L	<.0002					<0.00020				<0.00020	
1,1,1,2-Tetrachloroethane	µg/L	<5.0					<1.0				<1.0	
1,1,1-Trichloroethane	µg/L	<5.0					<1.0				<1.0	
1,1,2,2-Tetrachloroethane	µg/L	<5.0					<1.0				<1.0	
1,1,2-Trichloroethane	µg/L	<5.0					<1.0				<1.0	



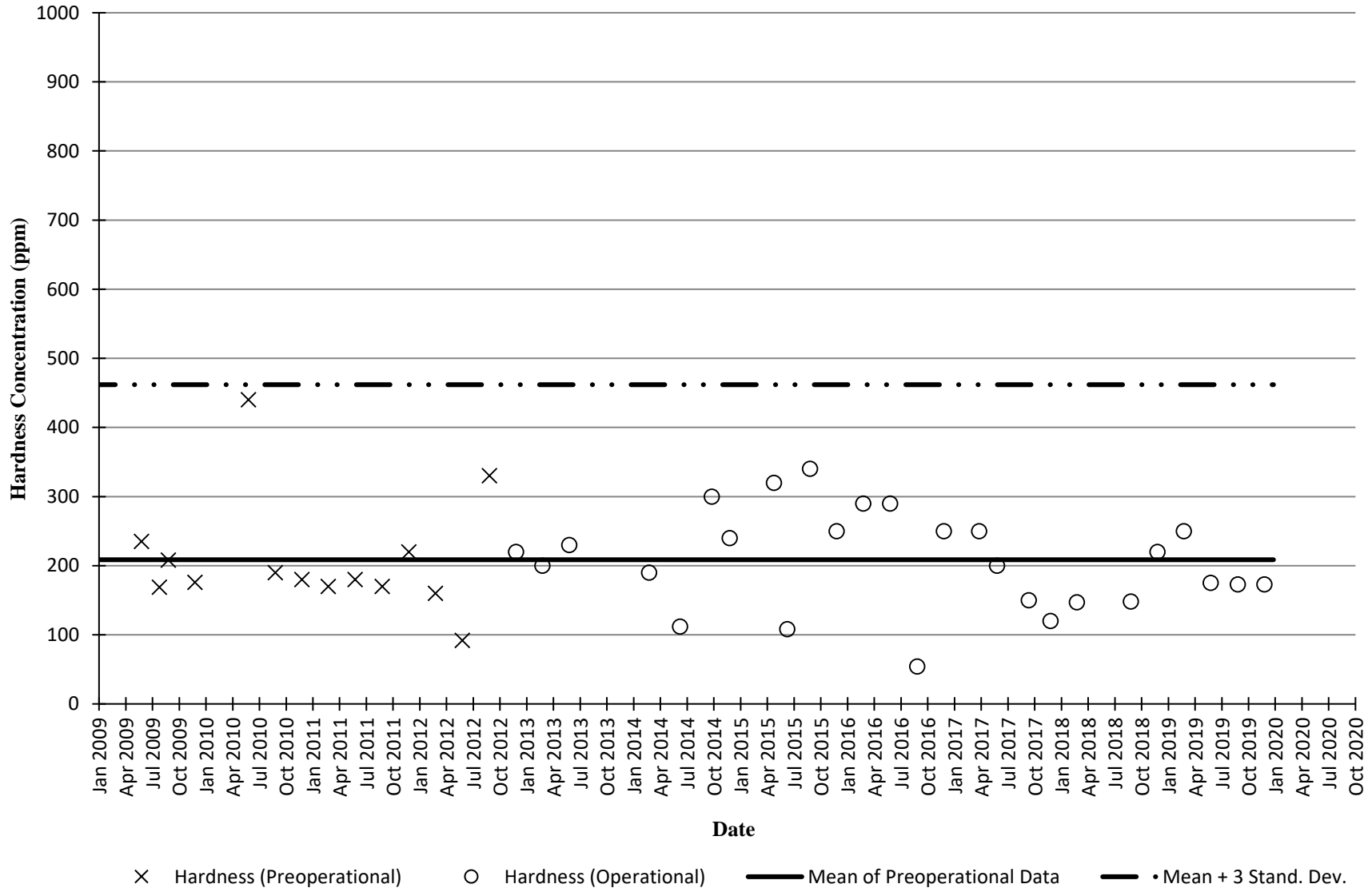
GM-28I OP		Mar_17	Jul_17	Sept_17	Dec_17	mar_2018	Sept_18	Dec_18	Mar_19	Jun_19	Sep_19	Dec_19
1,1-Dichloroethane	µg/L	<5.0					<1.0				<1.0	
1,1-Dichloroethene	µg/L	<5.0					<1.0				<1.0	
1,2,3-Trichloropropane	µg/L	<5.0					<1.0				<1.0	
1,2-Dibromo-3-chloropropane	µg/L	<5.0					<1.0				<1.0	
1,2-Dibromoethane	µg/L	<5.0					<1.0				<1.0	
1,2-Dichlorobenzene	µg/L	<5.0					<1.0				<1.0	
1,2-Dichloroethane	µg/L	<5.0					<1.0				<1.0	
1,2-Dichloropropane	µg/L	<5.0					<1.0				<1.0	
1,4-Dichlorobenzene	µg/L	<5.0					<1.0				<1.0	
2-Butanone	µg/L	<5.0					<5.0				<5.0	
2-Hexanone	µg/L	<5.0					<5.0				<5.0	
4-Methyl-2-pentanone	µg/L	<5.0					<5.0				<5.0	
Acetone	µg/L	<5.0					3.1J				<5.0	
Acrylonitrile	µg/L	<5.0					<1.0				<1.0	
Benzene	µg/L	<5.0					<1.0				<1.0	
Bromochloromethane	µg/L	<5.0					<1.0				<1.0	
Bromodichloromethane	µg/L	<5.0					<1.0				<1.0	
Bromoform	µg/L	<5.0					<1.0				<1.0	
Bromomethane	µg/L	<5.0					<1.0				<1.0	
Carbon disulfide	µg/L	<5.0					<1.0				<1.0	
Carbon tetrachloride	µg/L	<5.0					<1.0				<1.0	
Chlorobenzene	µg/L	<5.0					<1.0				<1.0	
Chloroethane	µg/L	<5.0					<1.0				<1.0	
Chloroform	µg/L	<5.0					<1.0				<1.0	
Chloromethane	µg/L	<5.0					<1.0				<1.0	
cis-1,2-Dichloroethene	µg/L	<5.0					<1.0				<1.0	
cis-1,3-Dichloropropene	µg/L	<5.0					<1.0				<1.0	
Dibromochloromethane	µg/L	<5.0					<1.0				<1.0	
Dibromomethane	µg/L	<5.0					<1.0				<1.0	
Ethanol	ug/L											
Ethylbenzene	µg/L	<5.0					<1.0				<1.0	
Iodomethane	µg/L	<5.0					<1.0				<1.0	
Isopropyl Alcohol	ug/L											
Methylene chloride	µg/L	<5.0					<1.0				<1.0	
Silane, methoxytrimethyl-	ug/L											
Silanol, trimethyl-	ug/L											
Styrene	µg/L	<5.0					<1.0				<1.0	
Sulfur dioxide	ug/L	null										
Tetrachloroethene	µg/L	<5.0					<1.0				<1.0	
Toluene	µg/L	<5.0					<1.0				<1.0	
trans-1,2-Dichloroethene	µg/L	<5.0					<1.0				<1.0	
trans-1,3-Dichloropropene	µg/L	<5.0					<1.0				<1.0	
trans-1,4-Dichloro-2-butene	µg/L	<5.0					<1.0				<1.0	
Trichloroethene	µg/L	<5.0					<1.0				<1.0	
Trichlorofluoromethane	µg/L	<5.0					<1.0				<1.0	
Trimethylsilyl fluoride	ug/L											
unknown	ug/L	9.1					10.5J					
Vinyl acetate	µg/L	<5.0					<1.0				<1.0	
Vinyl chloride	µg/L	<5.0					<1.0				<1.0	
Xylene (total)	µg/L	<5.0					<3.0				<3.0	
Cyanide	µg/L	<10					<10.0				<10.0	
Total Organic Carbon	mg/L		43.4				9.5					
Sulfide	mg/l	<2									<2.0	
1,4 dioxane	ug/l					.12 J	<2	.22 J	.22 J	0.25J	0.23	<.2

GM-28I OP		Mar_17	Jul_17	Sept_17	Dec_17	mar_2018	Sept_18	Dec_18	Mar_19	Jun_19	Sept_19	Dec_19	
6:2FTS	ng/l					<180	52	65	52	67	30	15	
8:2FTS	ng/l					<180	ND	ND	ND	3.3 J	ND	ND	
NEtFOSAA	ng/l					3.9 J	4.6 J	7.8 J	5.5 J	10	11 J	6.2	
NMeFOSAA	ng/l					<18	ND	ND	ND	3.2	ND	ND	
PFBS	ng/l						6	4	4	3.4	14	6.4	5.7
PFBA	ng/l					30 B	23 B	22 B	22	48	31	19	
PFDS	ng/l					<1.8	ND	.44 J	ND	ND	ND	ND	
PFDA	ng/l						7.3	7.1	9.3	7.3	15	11	5.8
PFDoA	ng/l					<1.8	ND	.68 J	ND	.69 J	.82 J	ND	
PFHpS	ng/l					.88 J	.51 J	.89 J	.75 J	1.3 J	1.2 J	0.67	
PFHpA	ng/l						25	17	19	19	34	39	19
PFHxS	ng/l					18 B	12 B	15 B	14 B		26	26 B	15
PFNA	ng/l						15	12	15	14	26	23	12
FOSA	ng/l						3.4	2	3.1	2.4	4.1	3.5 B	2.2
PFOS	ng/l						50	45	57	57	88	85	58
PFOA	ng/l						49	35	46	45	82	77	41
PFTeA	ng/l					<1.8	.78 J	ND	ND	ND	ND	ND	
PFTriA	ng/l					<1.8	ND	ND	ND	ND	ND	ND	
PFUnA	ng/l						7.7	6.9	6.7	5.5	6.4	7.6	4.7
PFHxA	ng/l						36	35	38	33	55	52	29
PFPeA	ng/l						41	47	48	44	73	58	34

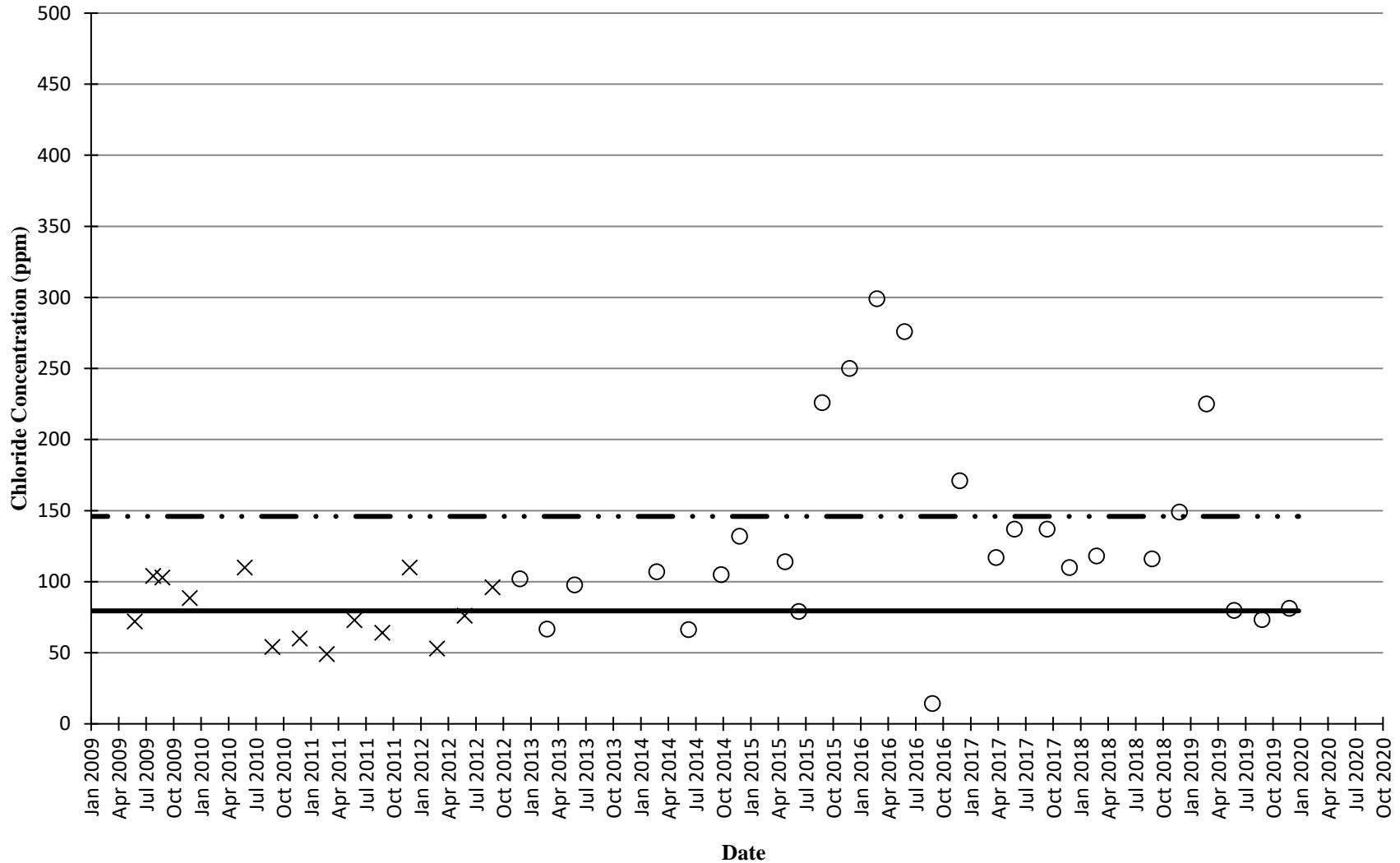
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The following graphs are utilized to compare the operational data of leachate indicators to their STV's.

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - Hardness

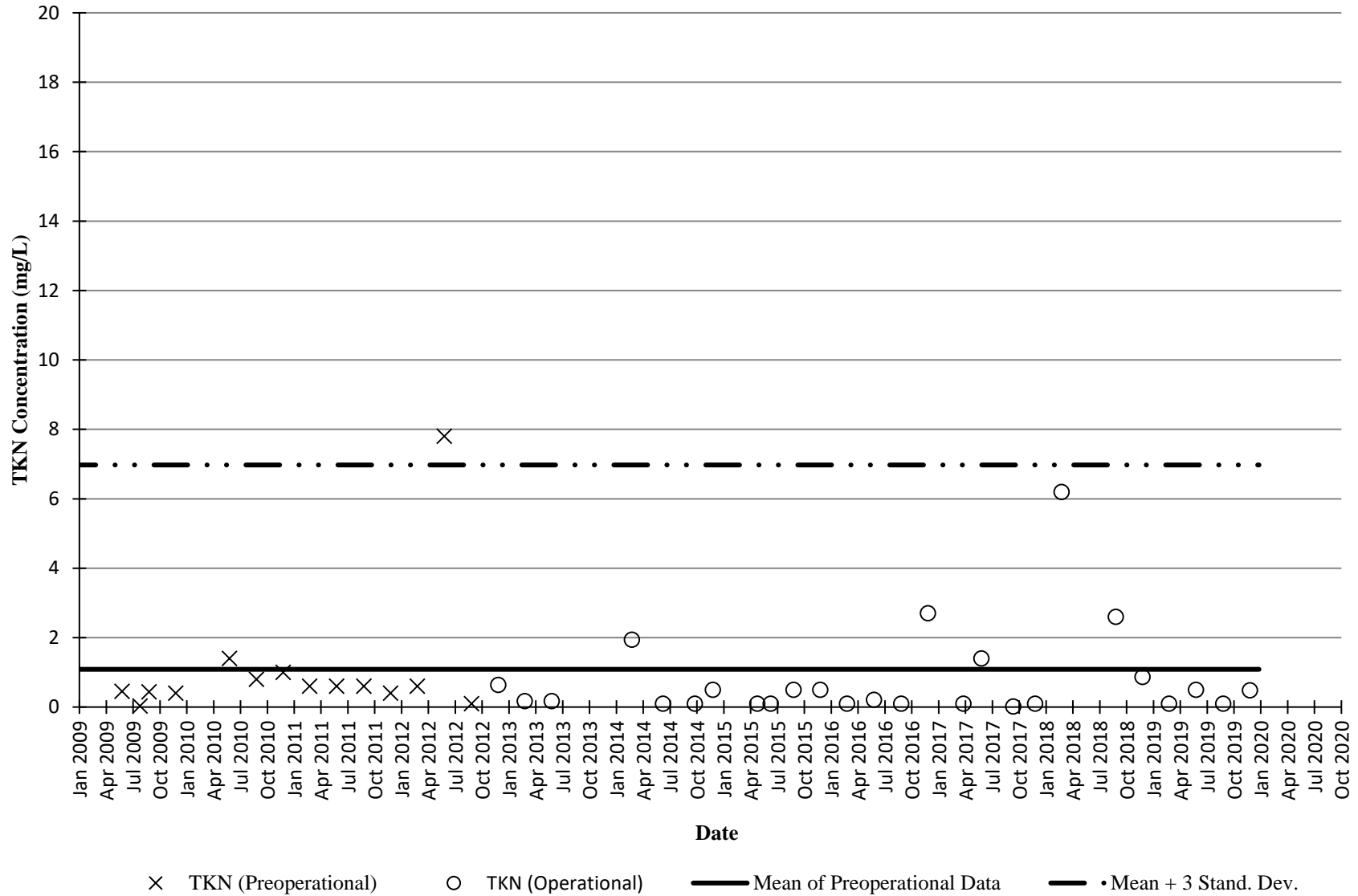


# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - Chloride

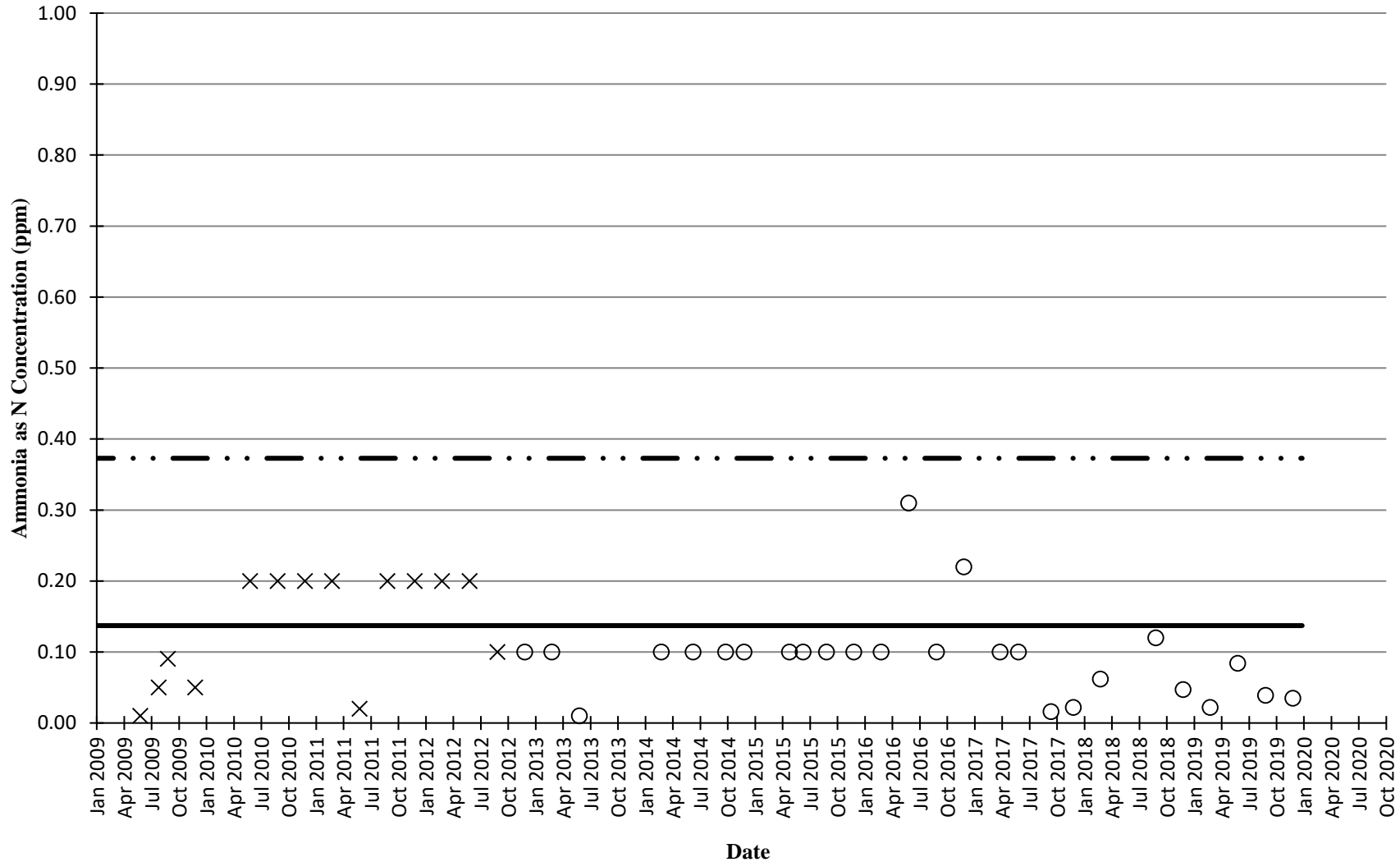


× Chloride (Preoperational)      ○ Chloride (Operational)      — Mean of Preoperational Data      - · - Mean + 3 Stand. Dev.

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - TKN

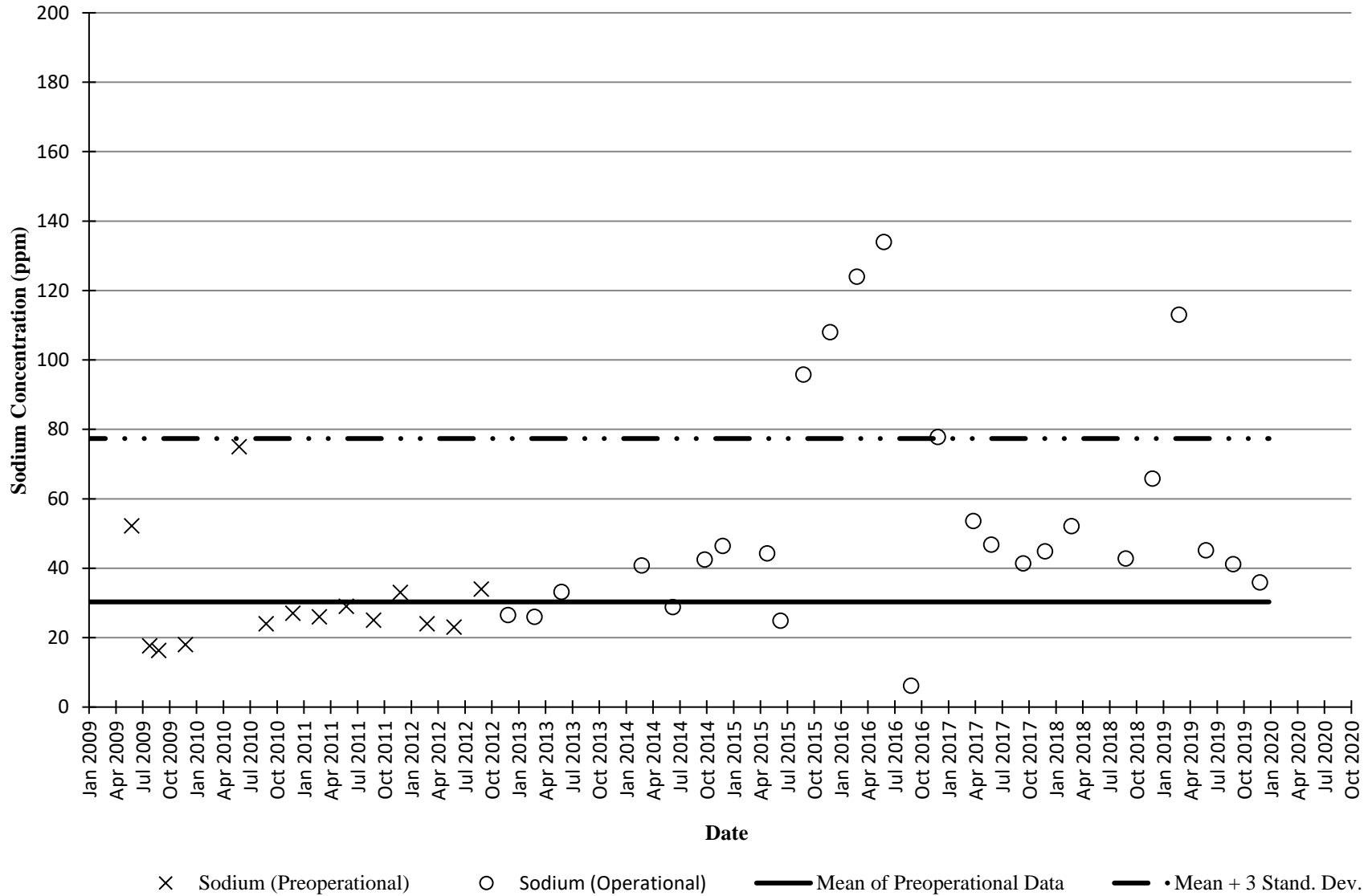


# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - Ammonia as N



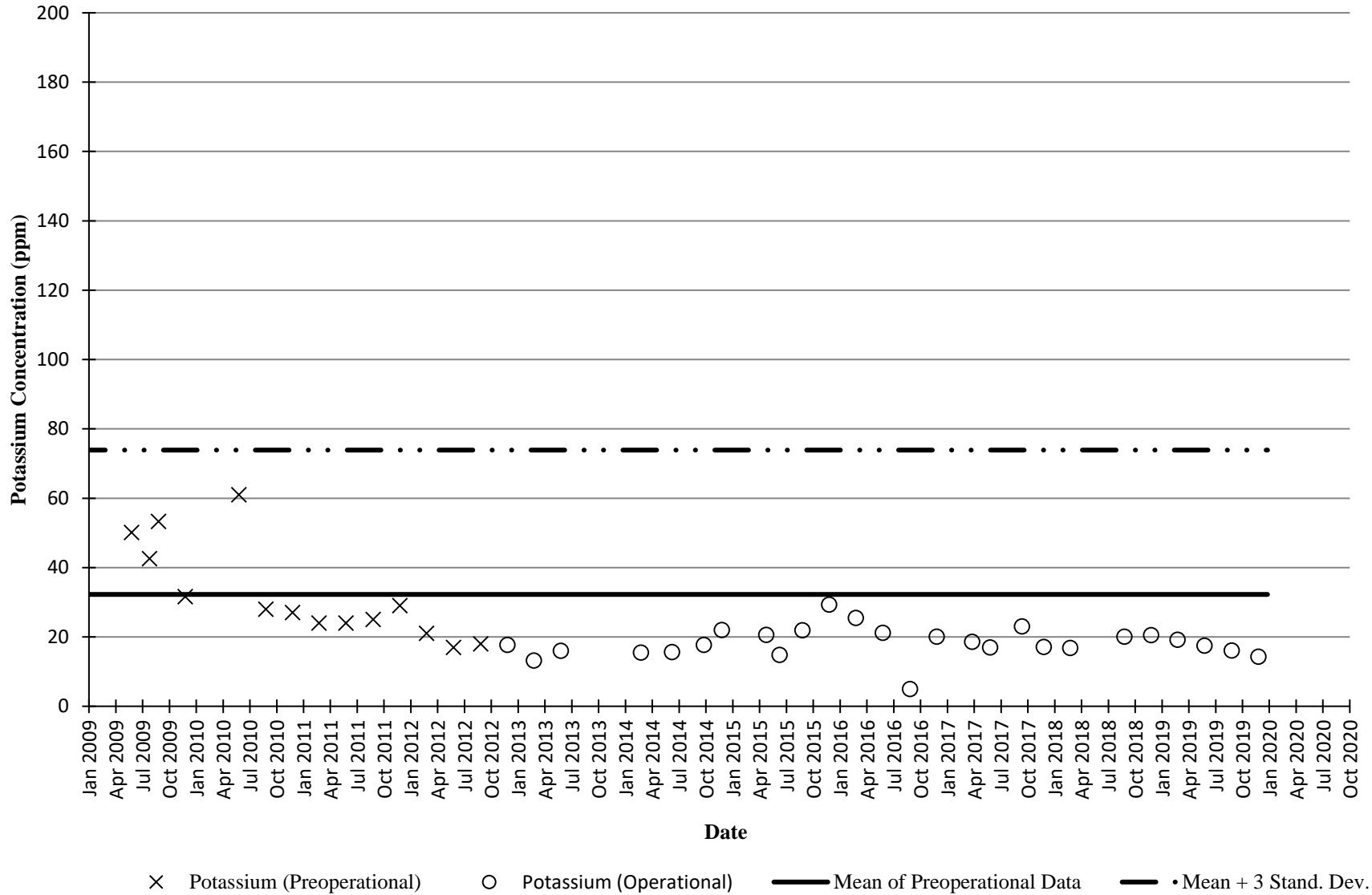
× Ammonia as N (Preoperational)    ○ Ammonia as N (Operational)    — Mean of Preoperational Data    - · - Mean + 3 Stand. Dev.

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - Sodium

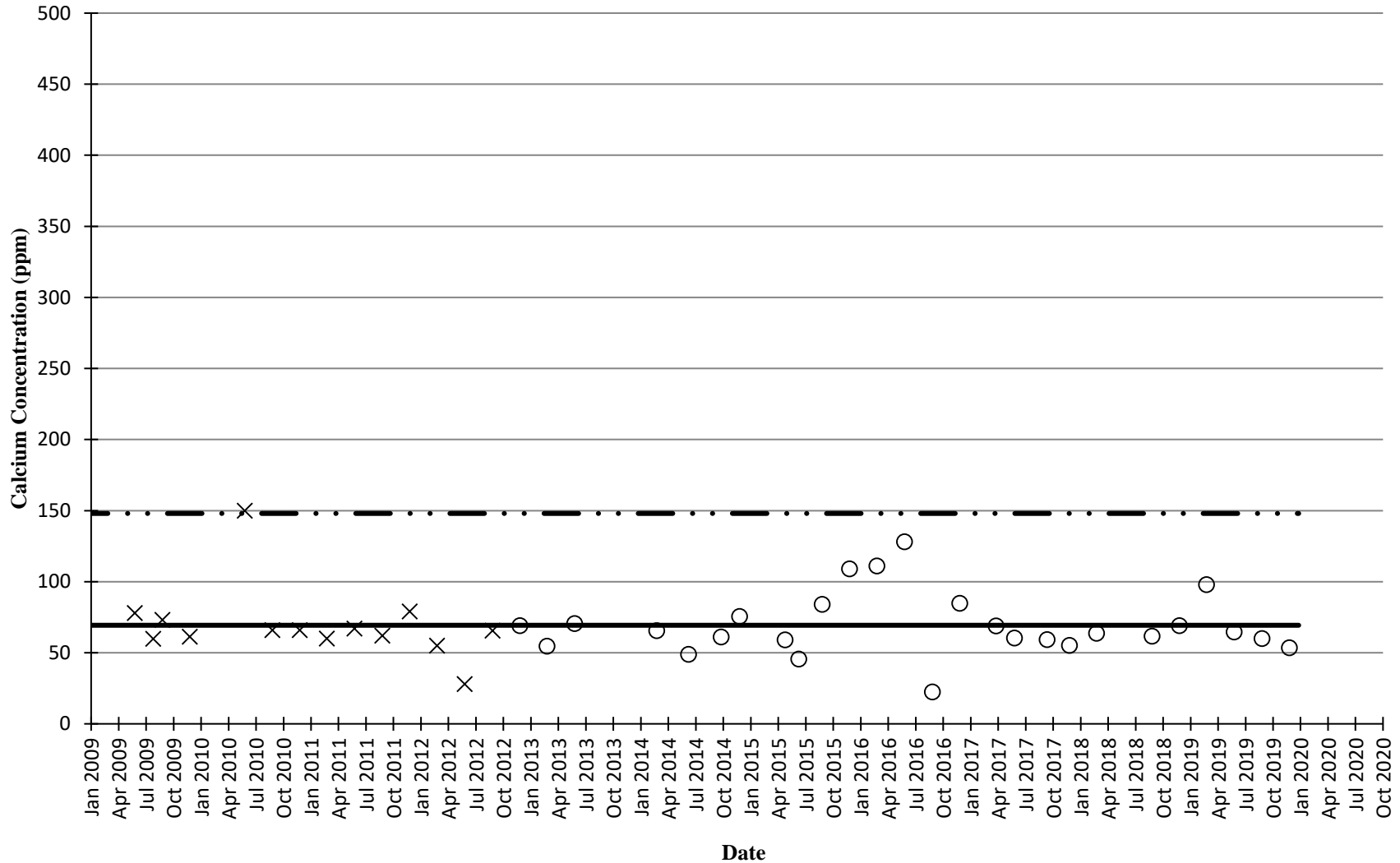




# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - Potassium

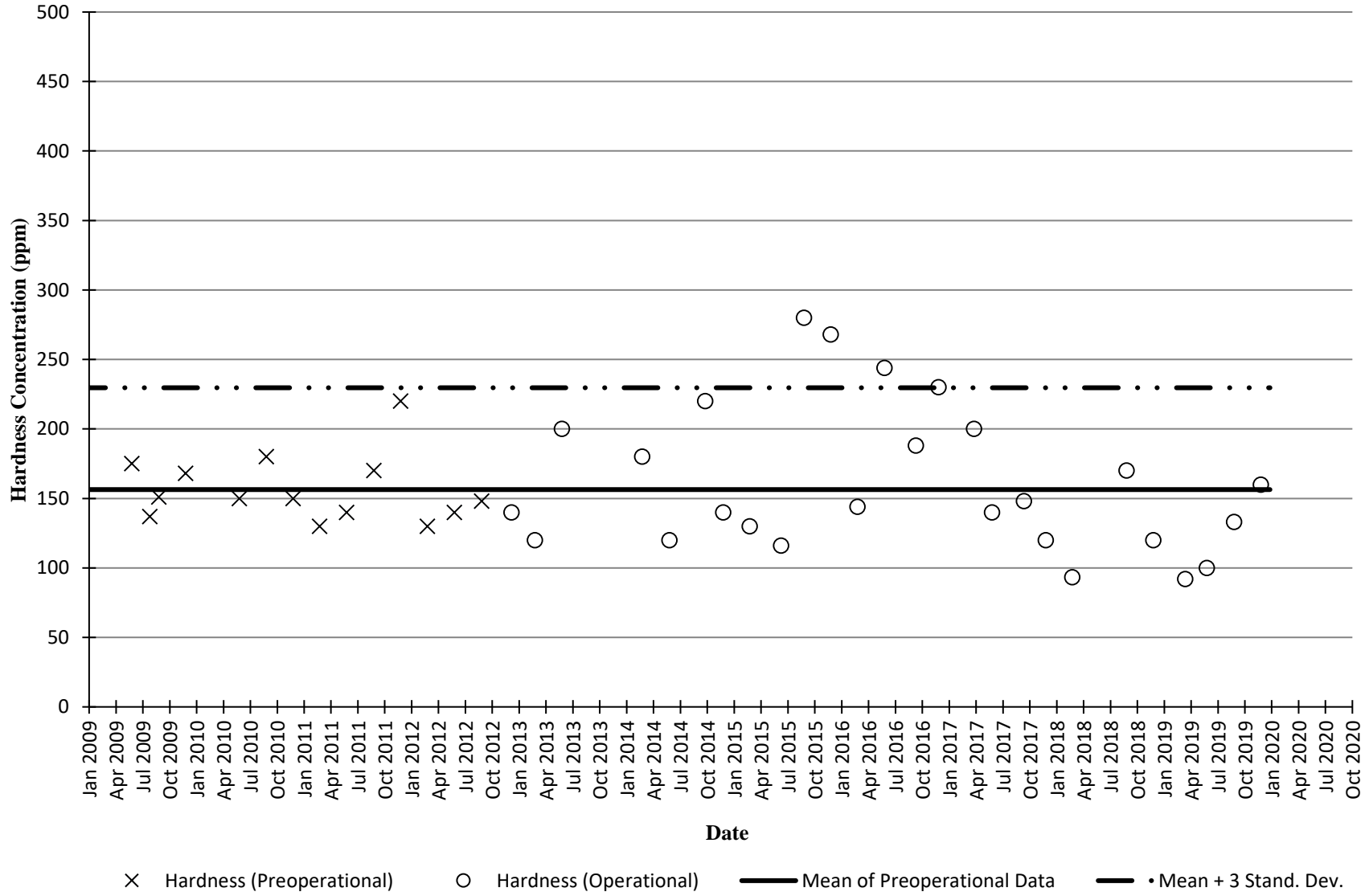


# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26 Existing Water Quality and Statistical Trigger - Calcium

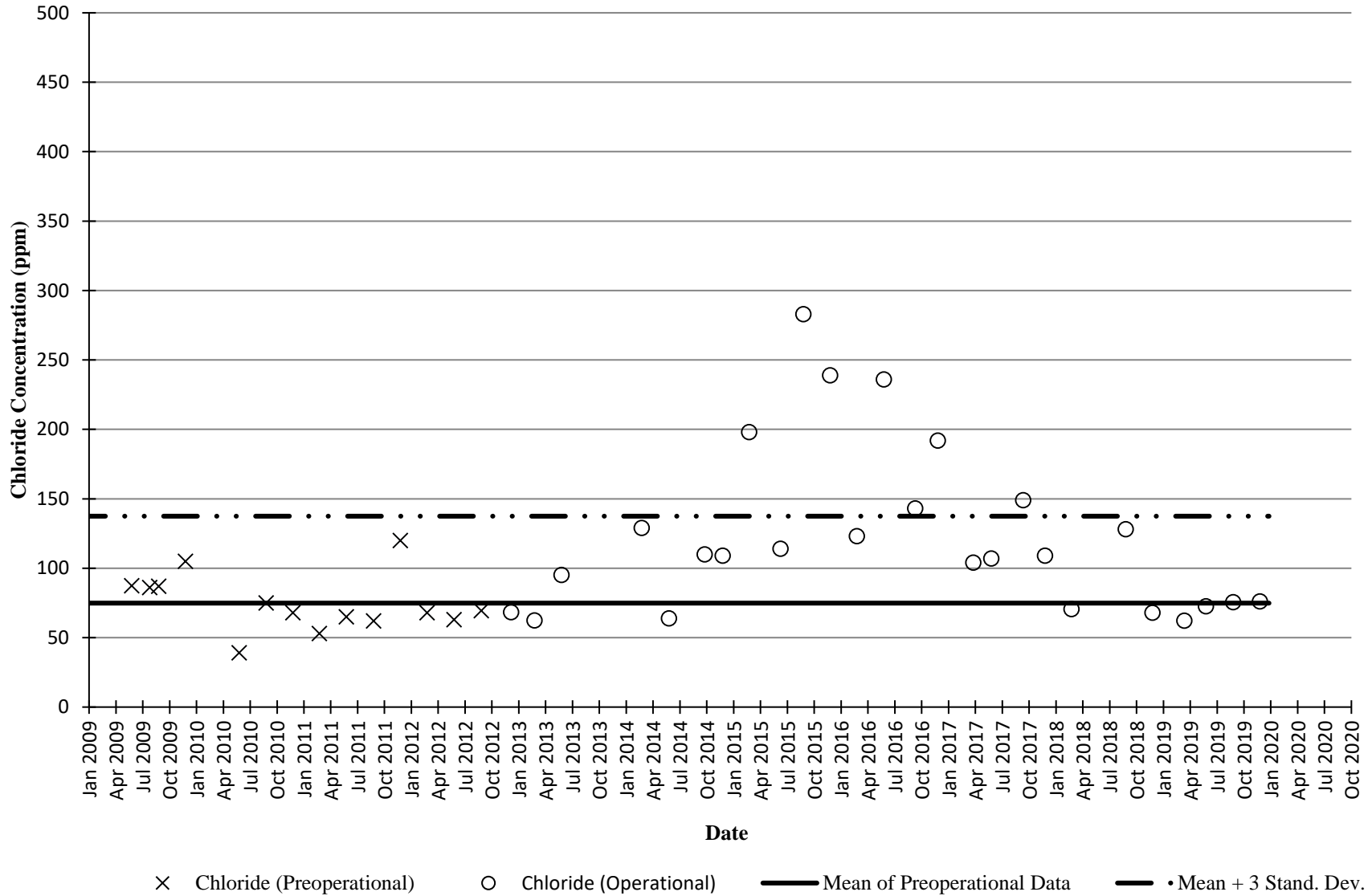


× Calcium (Preoperational)      ○ Calcium (Operational)      — Mean of Preoperational Data      — • Mean + 3 Stand. Dev.

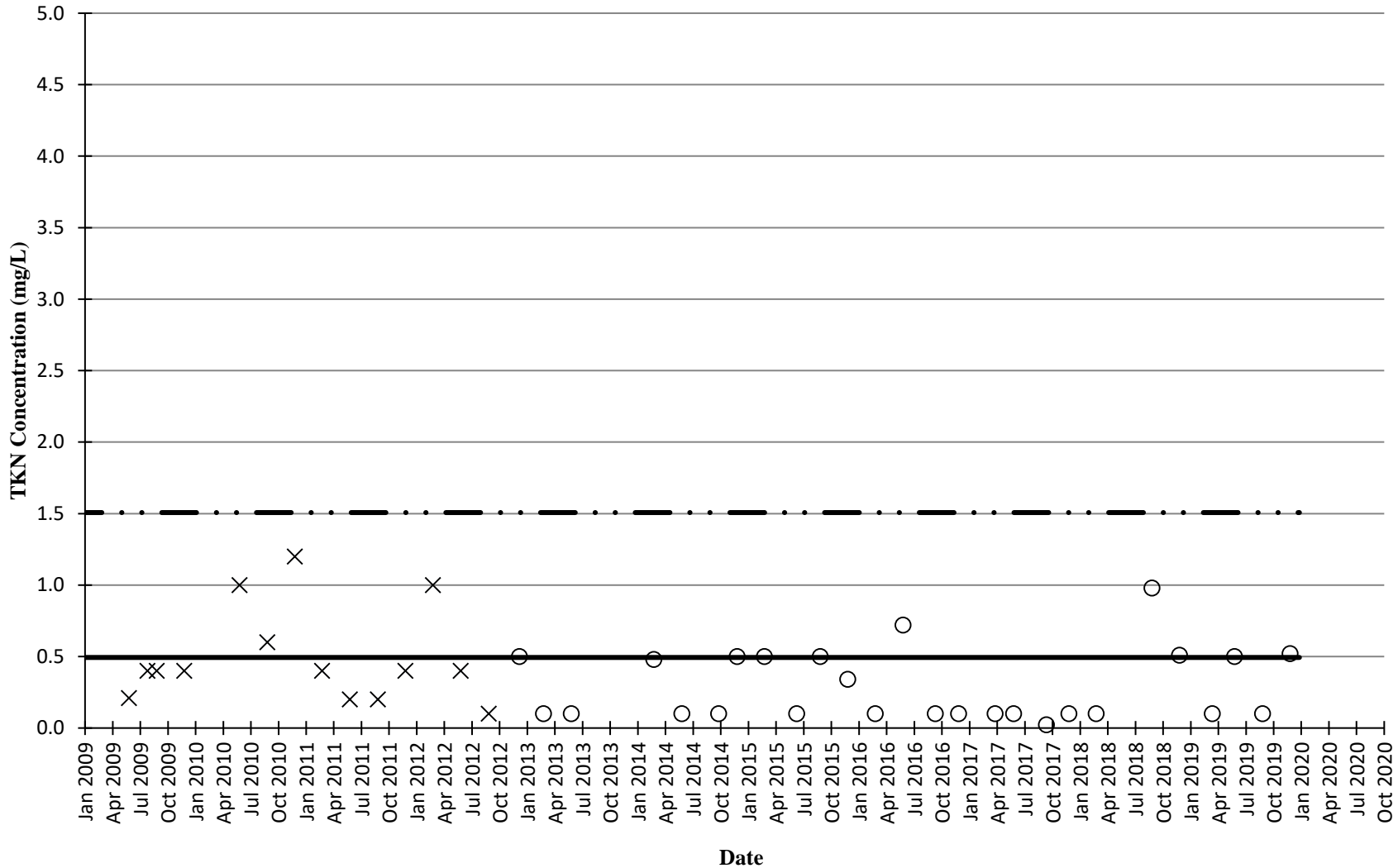
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - Hardness



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - Chloride

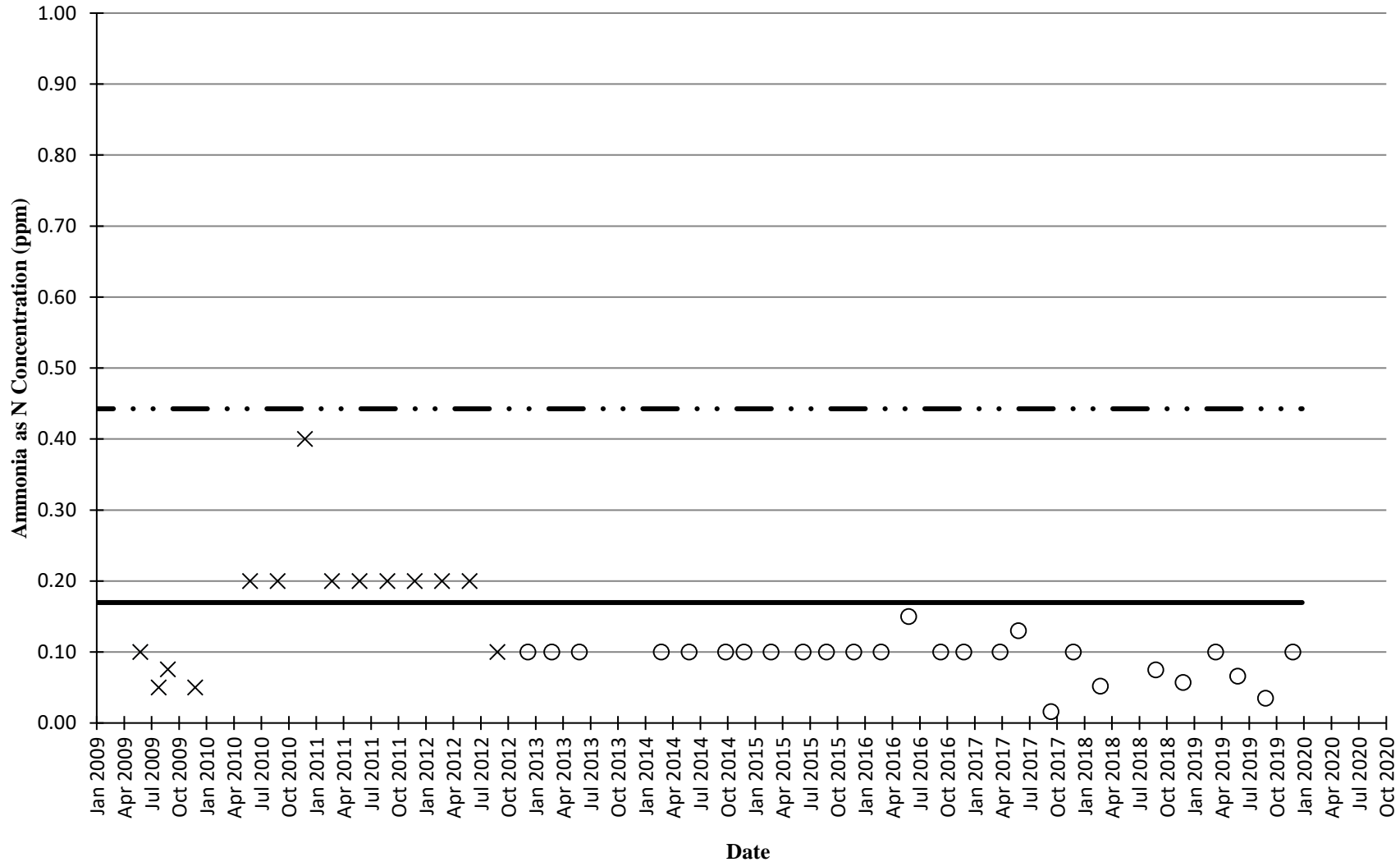


# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - TKN



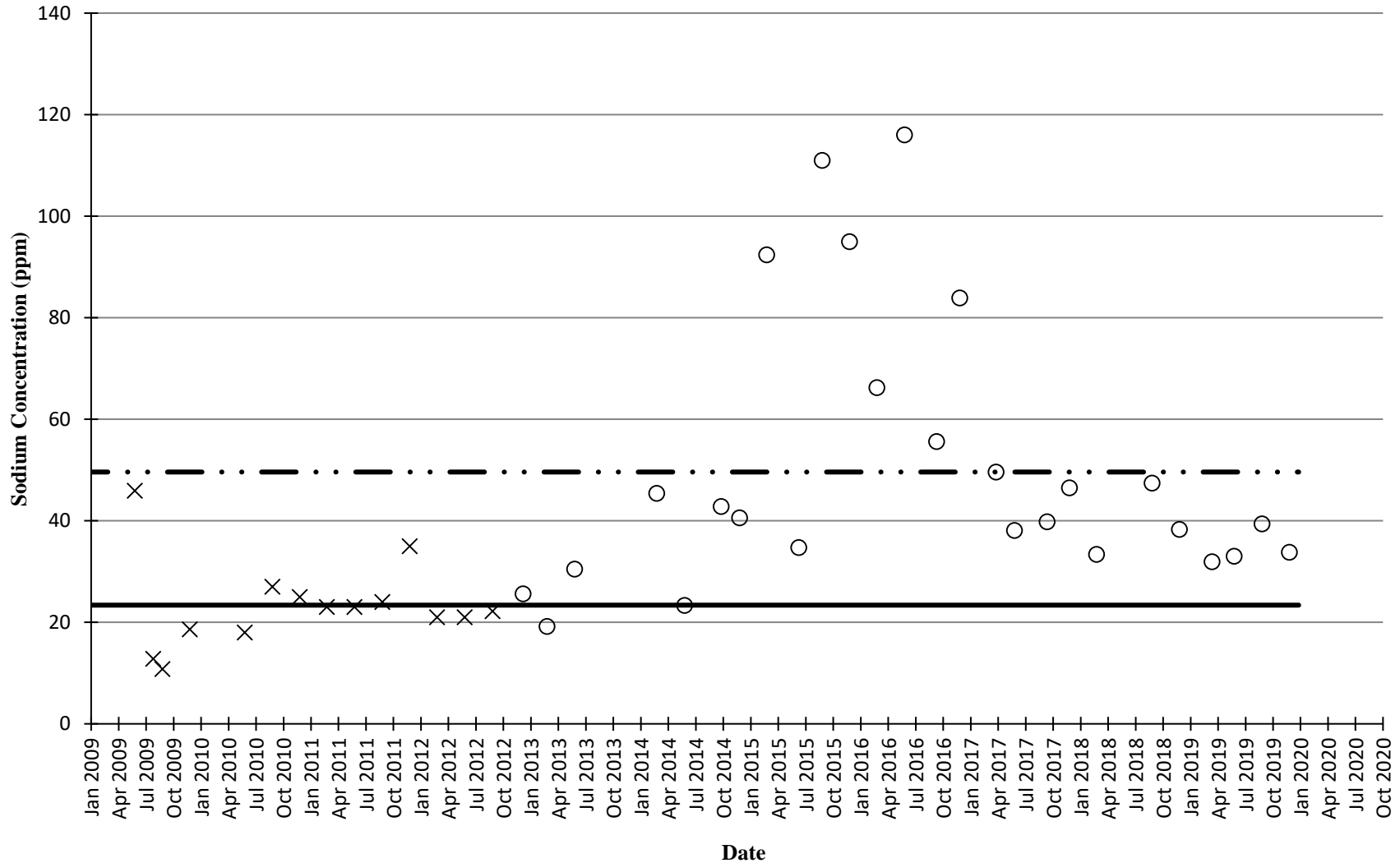
× TKN (Preoperational)      ○ TKN (Operational)      — Mean of Preoperational Data      - · - Mean + 3 Stand. Dev.

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - Ammonia as N



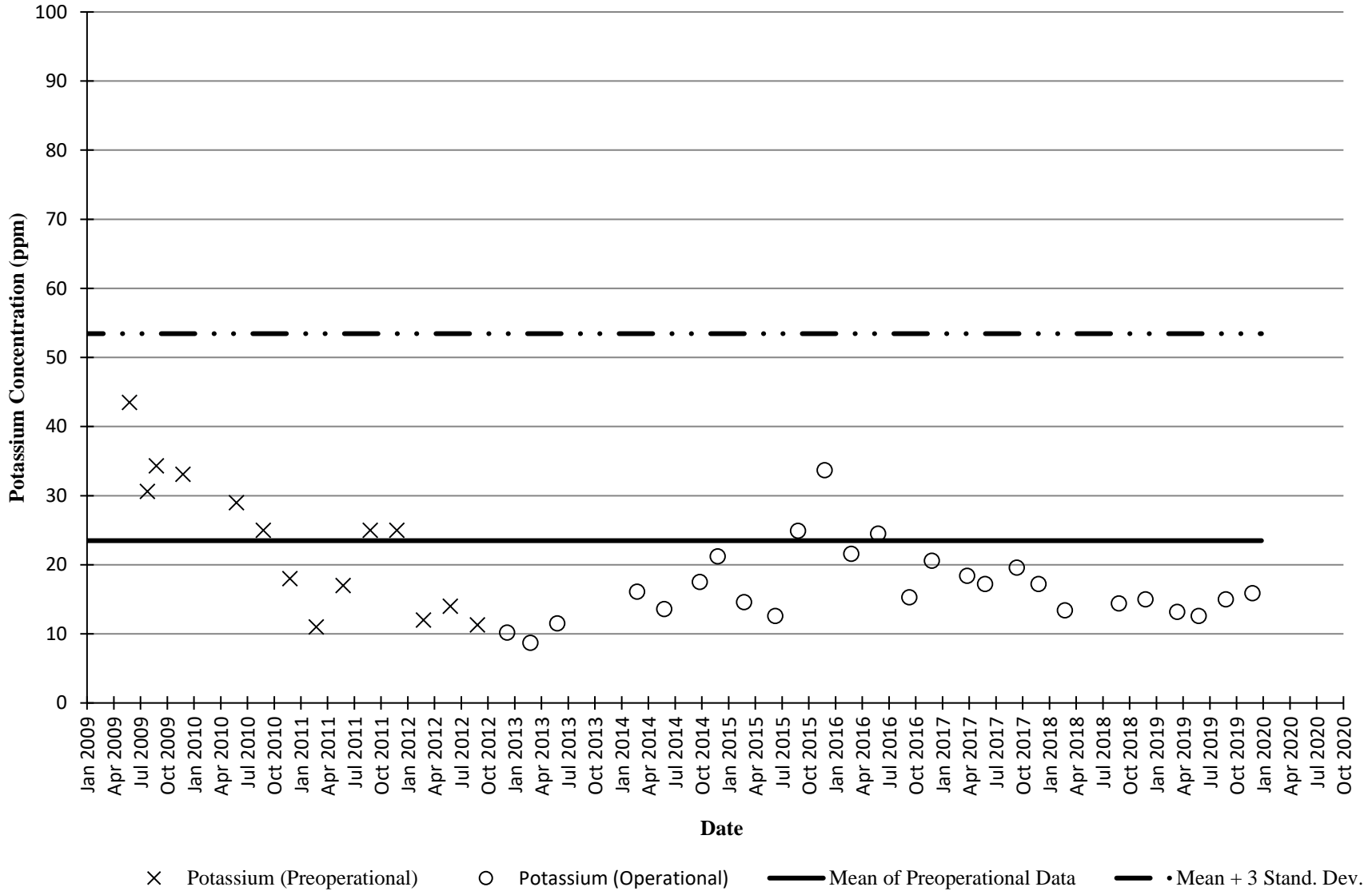
× Ammonia as N (Preoperational)    ○ Ammonia as N (Operational)    — Mean of Preoperational Data    - - - Mean + 3 Stand. Dev.

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - Sodium



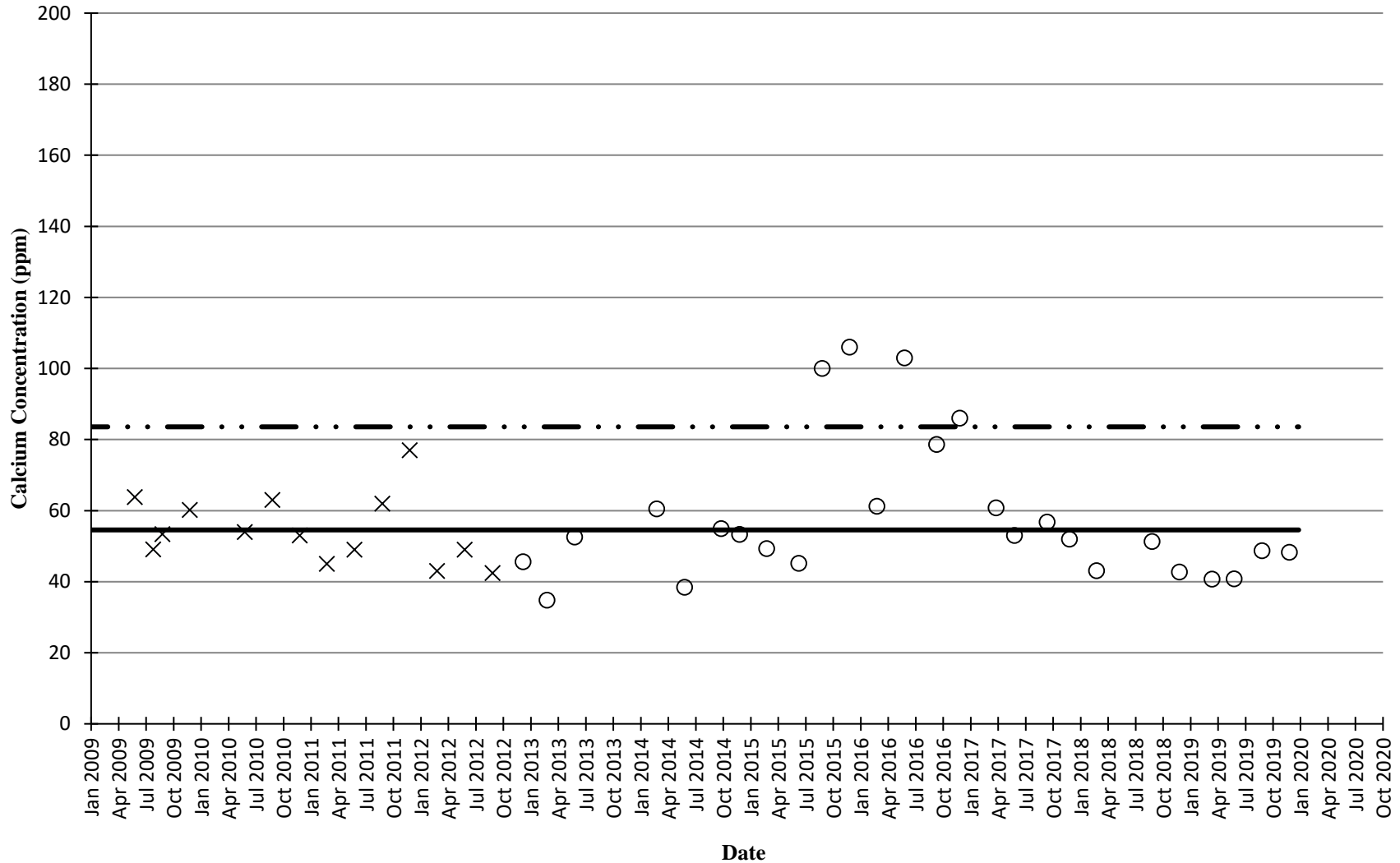
× Sodium (Preoperational)      ○ Sodium (Operational)      — Mean of Preoperational Data      — • Mean + 3 Stand. Dev.

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - Potassium





# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 26i Existing Water Quality and Statistical Trigger - Calcium



× Calcium (Preoperational)      ○ Calcium (Operational)      — Mean of Preoperational Data      - - - Mean + 3 Stand. Dev.

Analyte	Units	Dec 2012	Mar 2013	Jun 2013	Mar 2014	Jun 2014	Oct 2014	Dec 2014	May 2015	Jun 2015	Sep 2015	Dec 2015	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Apr 2017	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Sep 2018	Dec 2018	Mar 2019	Jun 2019	Sep 2019	Dec 2019
Hardness (Operational)	ppm	380	420	420	220	300	400	<b>1000</b>	220	290	340	220	208	208	200	170	170	700	320	320	200	130	200	250	180	147	150
Chloride (Operational)	ppm	161	340	439	452	428	406	498	456	509	492	457	409	359	349	300	301	811	504	319	306	368	292	468	442	357	330
TKN (Operational)	mg/L	14.6	14.8	11.6	<b>25.5</b>	<b>25.4</b>	<b>38.6</b>	<b>37.6</b>	<b>43.2</b>	<b>43.1</b>	<b>41.5</b>	<b>42.7</b>	<b>39.7</b>	<b>51.9</b>	<b>32.8</b>	<b>30.8</b>	<b>32.2</b>	<b>23.9</b>	<b>39.1</b>	<b>34.2</b>	<b>26.5</b>	<b>38.5</b>	<b>37.8</b>	<b>36.2</b>	<b>33.7</b>	<b>42</b>	<b>41.9</b>
Ammonia as N (Operational)	ppm	8.13	14.2	9.94	<b>23.2</b>	<b>29.5</b>	<b>36.2</b>	<b>38.3</b>	<b>41.7</b>	<b>43.6</b>	<b>49.3</b>	<b>48.9</b>	<b>44.9</b>	<b>39.4</b>	<b>40.3</b>	<b>34.2</b>	<b>33.6</b>	<b>25</b>	<b>27.6</b>	<b>30.6</b>	<b>30.6</b>	<b>34.7</b>	<b>34</b>	<b>29.5</b>	<b>32</b>	<b>35.1</b>	<b>27.1</b>
Sodium (Operational)	ppm	87.8	168	137	88.2	165	155	180	167	177	163	152	151	151	118	117	115	295	161	130	119	138	148	266	200	149	122
Potassium (Operational)	ppm	27.3	28.9	29.6	33.4	50.8	45.9	45.4	46.3	48.3	49.2	51.3	53.4	50.2	44.6	49.1	45.8	45.6	47.8	54.9	50.9	51.1	57.6	44	43.4	55.2	54.2
Calcium (Operational)	ppm	106	101	135	75.3	94	93.2	110	89.8	101	86.4	69.9	79.8	79.5	73.4	57.8	51.6	190	105	112	71.3	49.6	57.7	72.6	55.5	50.7	45.4

Well 27 Preoperational Data																		
Analyte	Units	Jun 2009	Aug 2009	Sep 2009	Dec 2009	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012	Sep 2012	Mean(M)	stan dev(sd)	M+(3sd)
Hardness (Preoperational)	ppm	275	172	150	114	600	590	360	340	280	290	370	275	320	268	314.57	140.84	737.10
Chloride (Preoperational)	ppm	106	156	116	87	990	1100	360	260	340	300	350	250	180	229	344.57	310.97	1277.48
TKN (Preoperational)	mg/L	9.53	11.5	7.34	4.62	15	14	9	7.2	6.4	6.2	11	7.2	6.6	8.15	8.84	3.05	17.98
Ammonia as N (Preoperational)	ppm	6.11	9.96	6.30	4.44	13	11	7.2	5.4	6	6.2	10	6.3	5.4	5.3	7.33	2.58	15.06
Sodium (Preoperational)	ppm	42.7	23.9	16.1	19.9	310	240	130	110	100	120	170	110	97	107	114.04	83.17	363.56
Potassium (Preoperational)	ppm	12.5	13.8	17.9	19.9	44	51	33	26	30	33	42	47.5	26	24.7	30.09	12.35	67.14
Calcium (Preoperational)	ppm	92.1	62.6	53.2	42.1	190	190	120	120	98	97	120	89.5	100	88.5	104.50	43.30	234.41

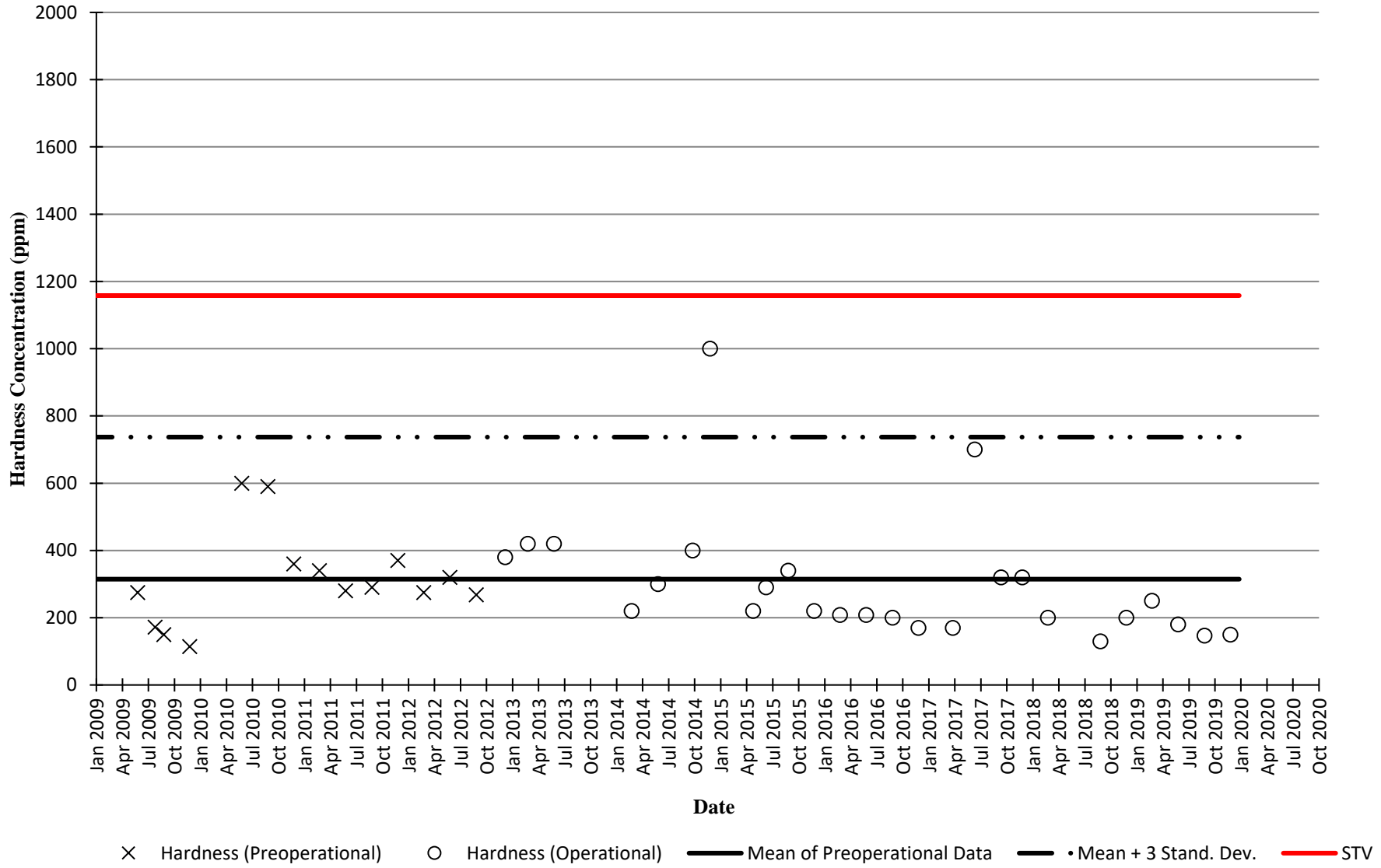
Mean	Mean
Jan 2008	Jan 2020
314.57	314.57
344.57	344.57
8.84	8.84
7.33	7.33
114.04	114.04
30.09	30.09
104.50	104.50

M+3sd	M+3sd
Jan 2008	Jan 2020
<b>737.10</b>	<b>737.10</b>
<b>1277.48</b>	<b>1277.48</b>
<b>17.98</b>	<b>17.98</b>
<b>15.06</b>	<b>15.06</b>
<b>363.56</b>	<b>363.56</b>
<b>67.14</b>	<b>67.14</b>
<b>234.41</b>	<b>234.41</b>

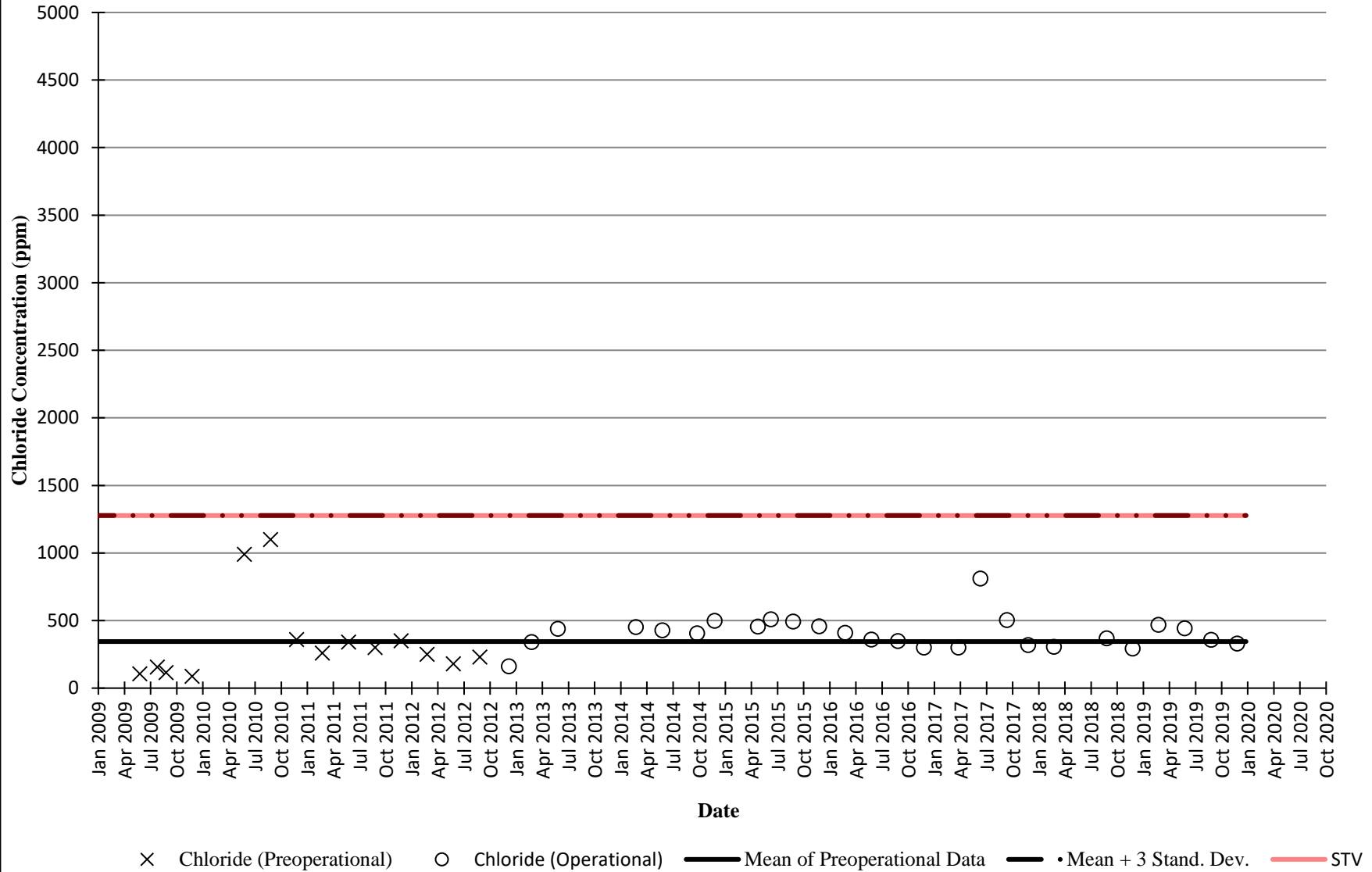
STV	STV
Jan 2008	Jan 2020
<b>1158.00</b>	<b>1158.00</b>
<b>1277.00</b>	<b>1277.00</b>
<b>58.35</b>	<b>58.35</b>
<b>53.00</b>	<b>53.00</b>
<b>414.00</b>	<b>414.00</b>
<b>122.00</b>	<b>122.00</b>
<b>375.00</b>	<b>375.00</b>

Indicates sample is below detection limit  
Indicates sample is above Mean + 3 Standard Deviations  
Indicates sample exceeds overall STV

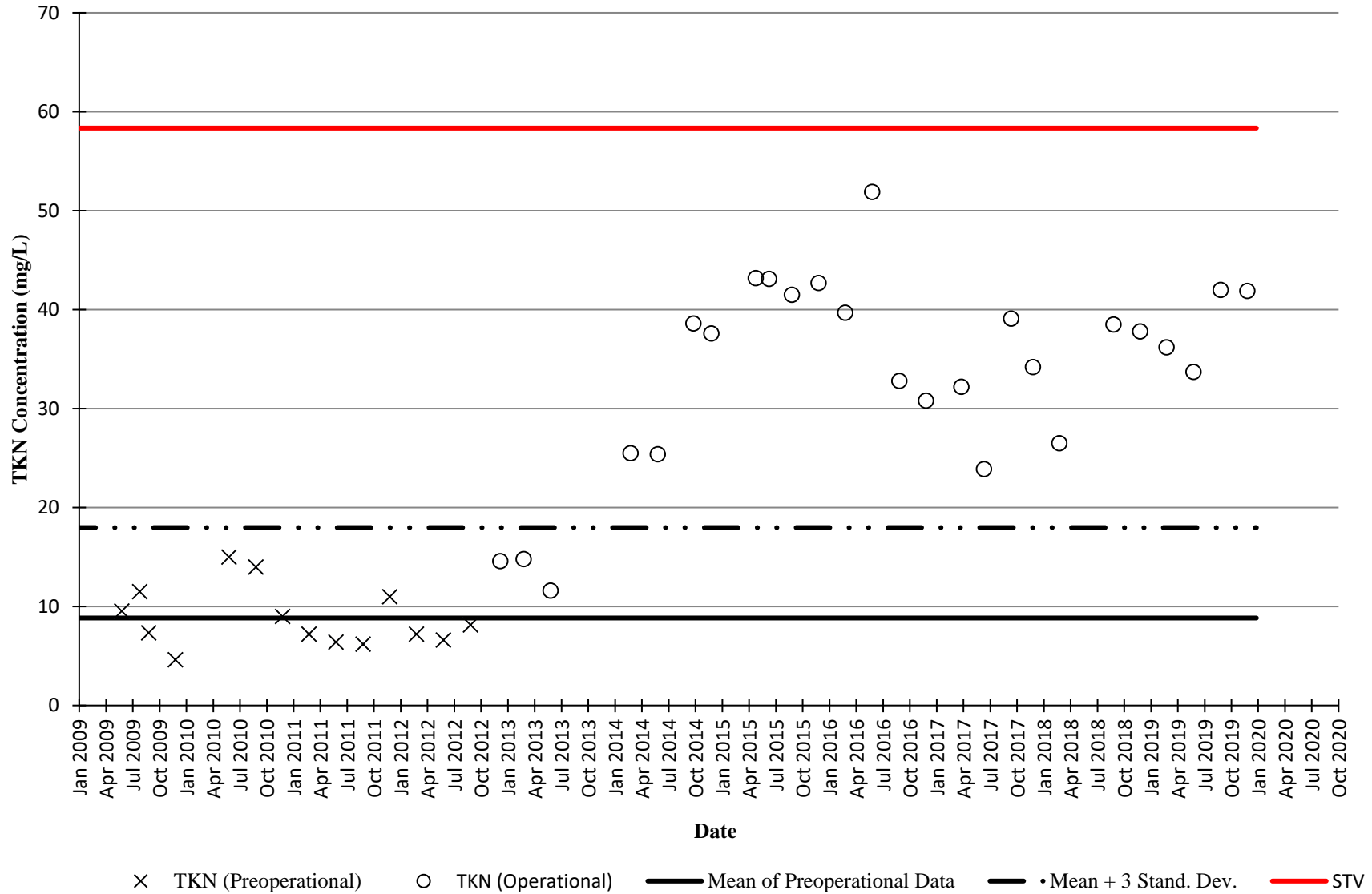
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - Hardness



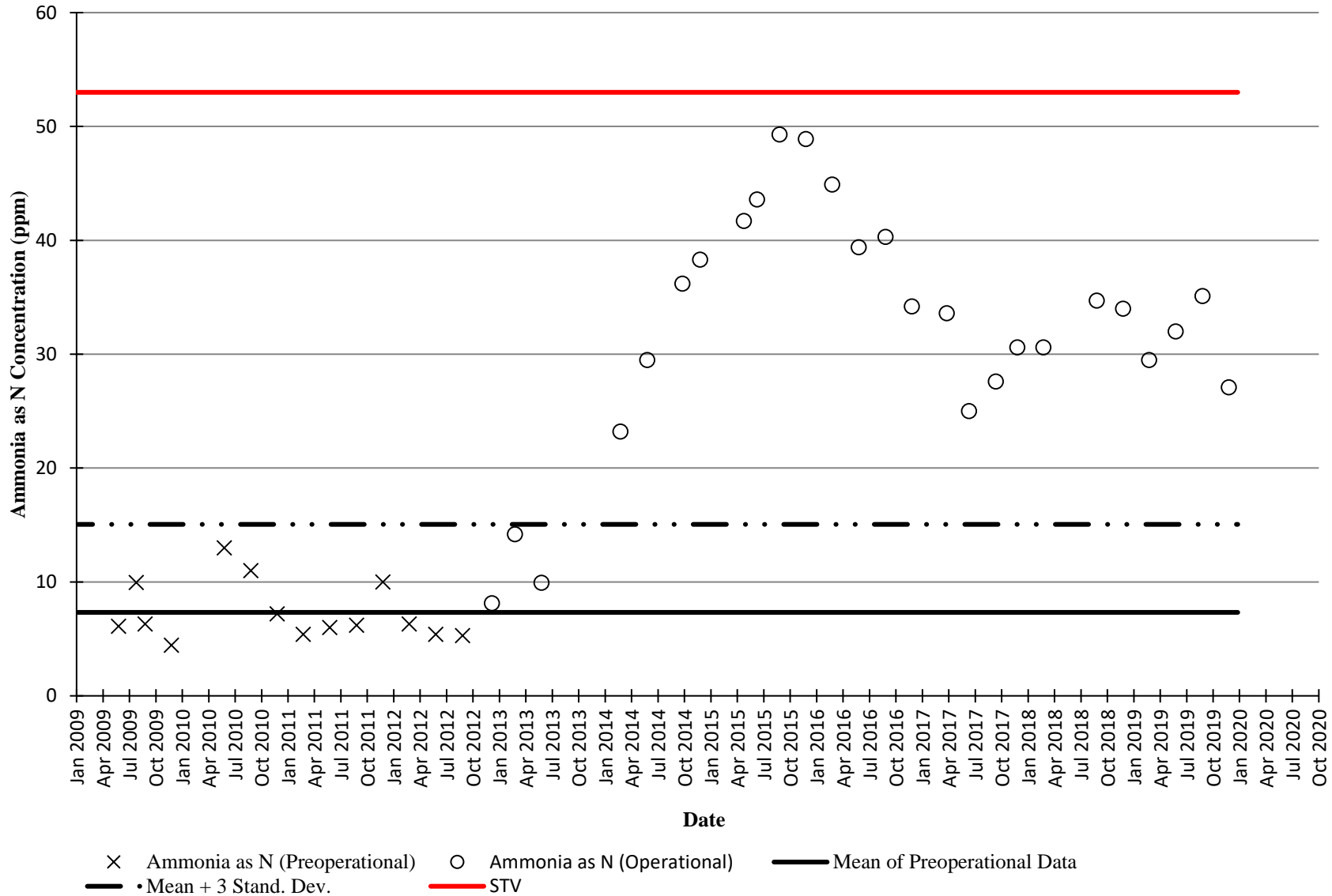
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - Chloride



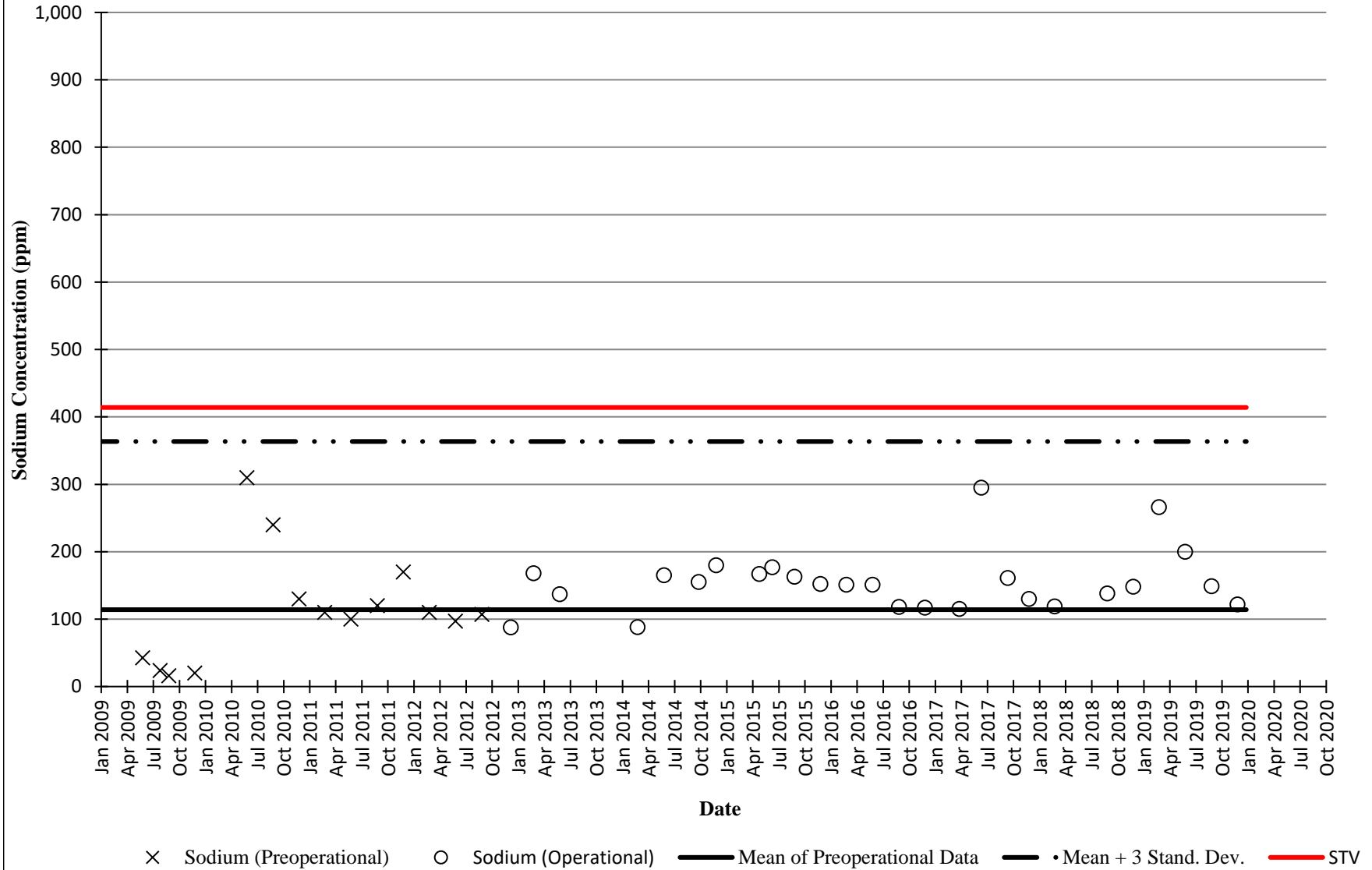
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - TKN



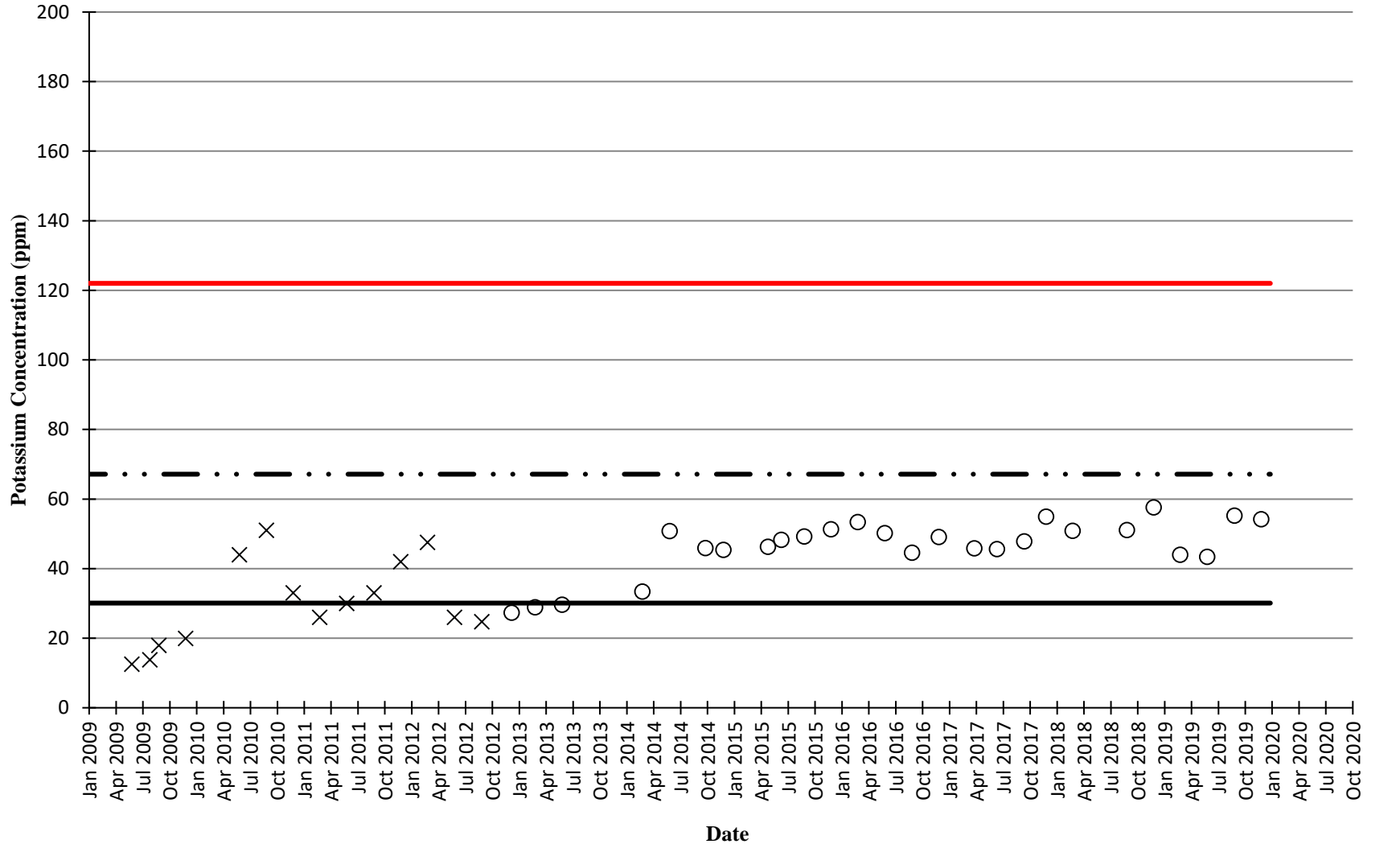
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - Ammonia as N



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - Sodium



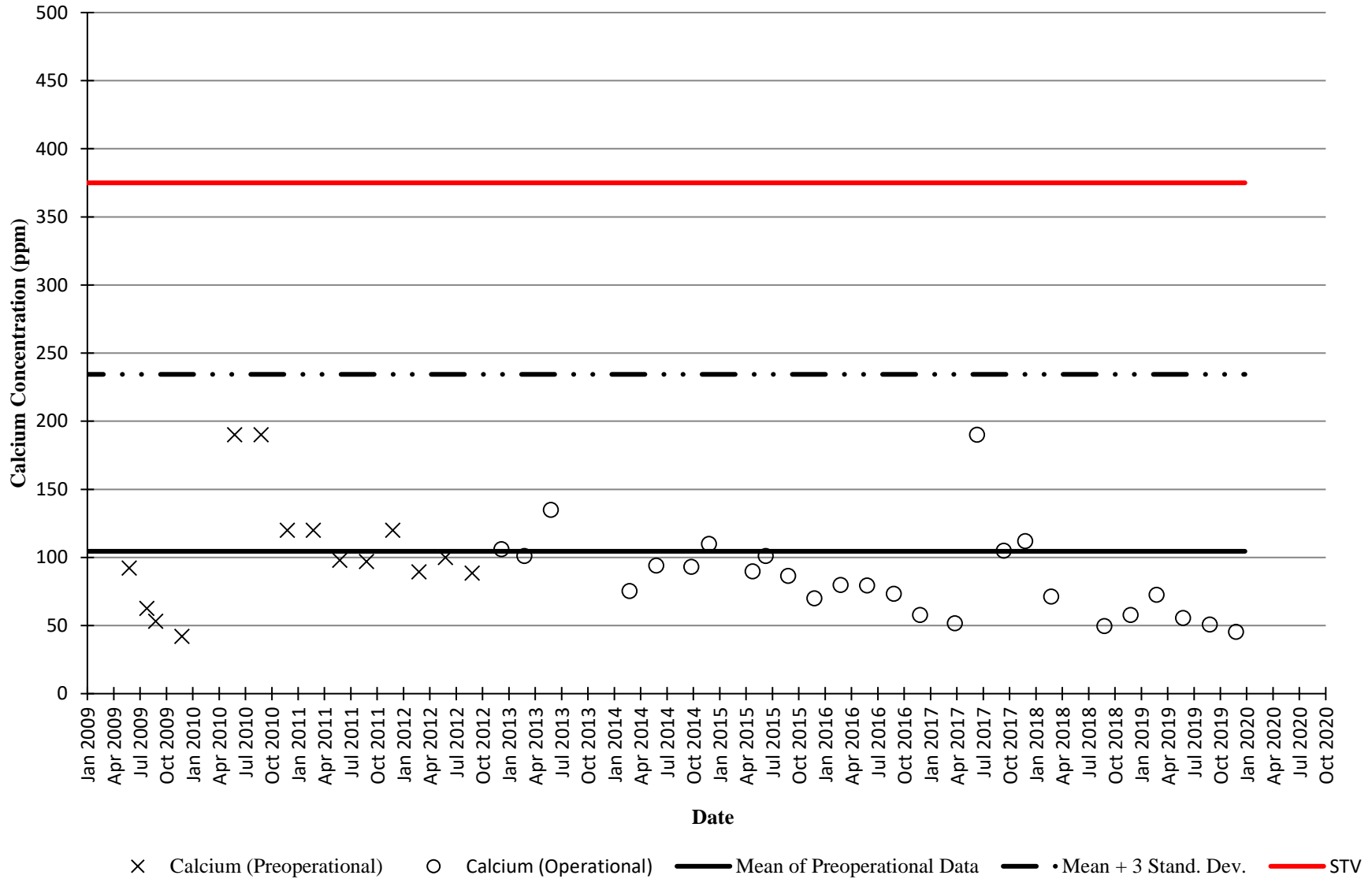
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - Potassium



× Potassium (Preoperational)    ○ Potassium (Operational)    — Mean of Preoperational Data    - - - Mean + 3 Stand. Dev.    — STV



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27 Existing Water Quality and Statistical Trigger - Calcium



Analyte	Units	Dec 2012	Mar 2013	Jun 2013	Mar 2014	Jun 2014	Oct 2014	Dec 2014	May 2015	Jul 2015	Sep 2015	Dec 2015	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Apr 2017	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Sep 2018	Dec 2018	Mar 2019	Jun 2019	Sep 2019	Dec 2019
Hardness (Operational)	ppm	300	240	370	290	280	440	550	400	320	300	276	228	280	250	190	250	300	220	173	320	190	350	180	190	240	200
Chloride (Operational)	ppm	255	192	251	324	297	370	427	<b>433</b>	<b>504</b>	344	406	347	333	363	297	284	420	381	300	<b>2</b>	357	<b>920</b>	340	424	<b>471</b>	317
TKN (Operational)	mg/L	10.7	7.12	<b>17.7</b>	<b>15.4</b>	<b>13.8</b>	<b>14</b>	<b>16.2</b>	<b>17.6</b>	<b>18.5</b>	<b>16.4</b>	<b>19.1</b>	<b>18.6</b>	<b>25.2</b>	<b>16.9</b>	<b>18.1</b>	<b>18.6</b>	<b>13</b>	<b>30.4</b>	<b>19.1</b>	<b>21.8</b>	<b>18.2</b>	<b>21.7</b>	10.1	<b>19.3</b>	<b>23.5</b>	<b>13.9</b>
Ammonia as N (Operational)	ppm	8	6.94	<b>13.4</b>	<b>11.7</b>	<b>12.5</b>	<b>13.6</b>	<b>16.8</b>	<b>17.1</b>	<b>19.9</b>	<b>10.3</b>	<b>18</b>	<b>22.5</b>	<b>21.2</b>	<b>21.8</b>	<b>18.5</b>	<b>18.4</b>	<b>14.5</b>	<b>18.3</b>	<b>20.4</b>	<b>20.3</b>	<b>16.1</b>	<b>20.1</b>	<b>9.8</b>	<b>17.5</b>	<b>19.7</b>	<b>12.6</b>
Sodium (Operational)	ppm	81.6	76.1	133	104	145	130	143	<b>174</b>	149	127	131	119	126	109	112	115	112	116	115	157	125	<b>225</b>	164	<b>175</b>	<b>194</b>	109
Potassium (Operational)	ppm	29.3	23.1	28.1	34	37.5	36.1	37	39.8	44.9	39.4	43.8	39	37.3	34.2	37	35	36.6	42.3	41.5	40.3	33.4	40.2	21.3	38.7	44.7	29.7
Calcium (Operational)	ppm	108	75.5	90.7	119	124	111	120	142	133	109	111	96.4	110	92.2	73.4	76.8	86.4	82.6	71	114	72.6	124	70.6	72.8	91.5	57.7

Well 27i Preoperational Data																		
Analyte	Units	Jun 2009	Aug 2009	Sep 2009	Dec 2009	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012	Sep 2012	Mean(M)	stan dev(sd)	M+(3sd)
Hardness (Preoperational)	ppm	180	175	189	187	200	480	350	270	340	360	320	310	350	308	287.07	90.66	559.04
Chloride (Preoperational)	ppm	105	126	112	104	150	220	250	200	315	310	270	260	260	202.5	206.04	75.34	432.04
TKN (Preoperational)	mg/L	4.33	4.63	4.54	4.06	4.2	5.4	6.2	4.8	6.3	6.4	7	7.4	7.4	11.59	6.02	2.00	12.02
Ammonia as N (Preoperational)	ppm	2.66	3.44	3.78	3.52	3.2	4.4	5	3.6	5.7	5.4	6.2	6.4	6.4	4.78	4.61	1.27	8.42
Sodium (Preoperational)	ppm	52.3	19.2	15.1	20.2	54	70	74	62	66	110	110	95	120	79	67.63	34.04	169.76
Potassium (Preoperational)	ppm	18.8	15	18.9	15.4	22	28	27	25	32.5	31	34	34	34	24.2	25.70	6.90	46.40
Calcium (Preoperational)	ppm	65.8	62.4	67.7	66.1	71	180	120	95	120	120	110	110	120	81.9	99.28	33.01	198.30

Mean	Mean
Jan 2008	Jan 2020
287.07	287.07
206.04	206.04
6.02	6.02
4.61	4.61
67.63	67.63
25.70	25.70
99.28	99.28

M+3sd	M+3sd
Jan 2008	Jan 2020
<b>559.04</b>	<b>559.04</b>
<b>432.04</b>	<b>432.04</b>
<b>12.02</b>	<b>12.02</b>
<b>8.42</b>	<b>8.42</b>
<b>169.76</b>	<b>169.76</b>
<b>46.40</b>	<b>46.40</b>
<b>198.30</b>	<b>198.30</b>

STV	STV
Jan 2008	Jan 2020
<b>1158.00</b>	<b>1158.00</b>
<b>1277.00</b>	<b>1277.00</b>
<b>58.35</b>	<b>58.35</b>
<b>53.00</b>	<b>53.00</b>
<b>414.00</b>	<b>414.00</b>
<b>122.00</b>	<b>122.00</b>
<b>375.00</b>	<b>375.00</b>

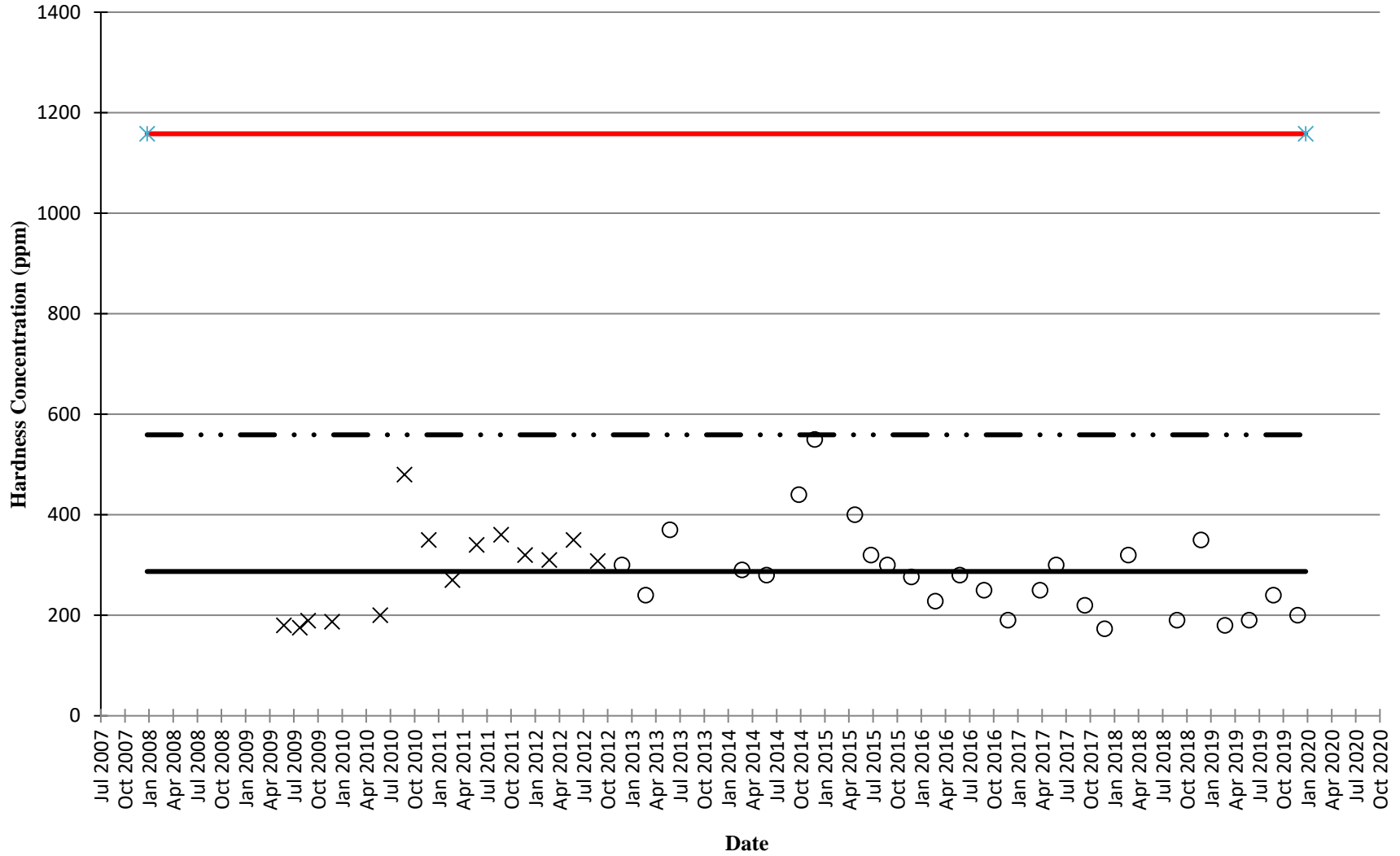
Indicates sample is below detection limit

Indicates sample is above Mean + 3 Standard Deviations

Indicates sample exceeds overall STV

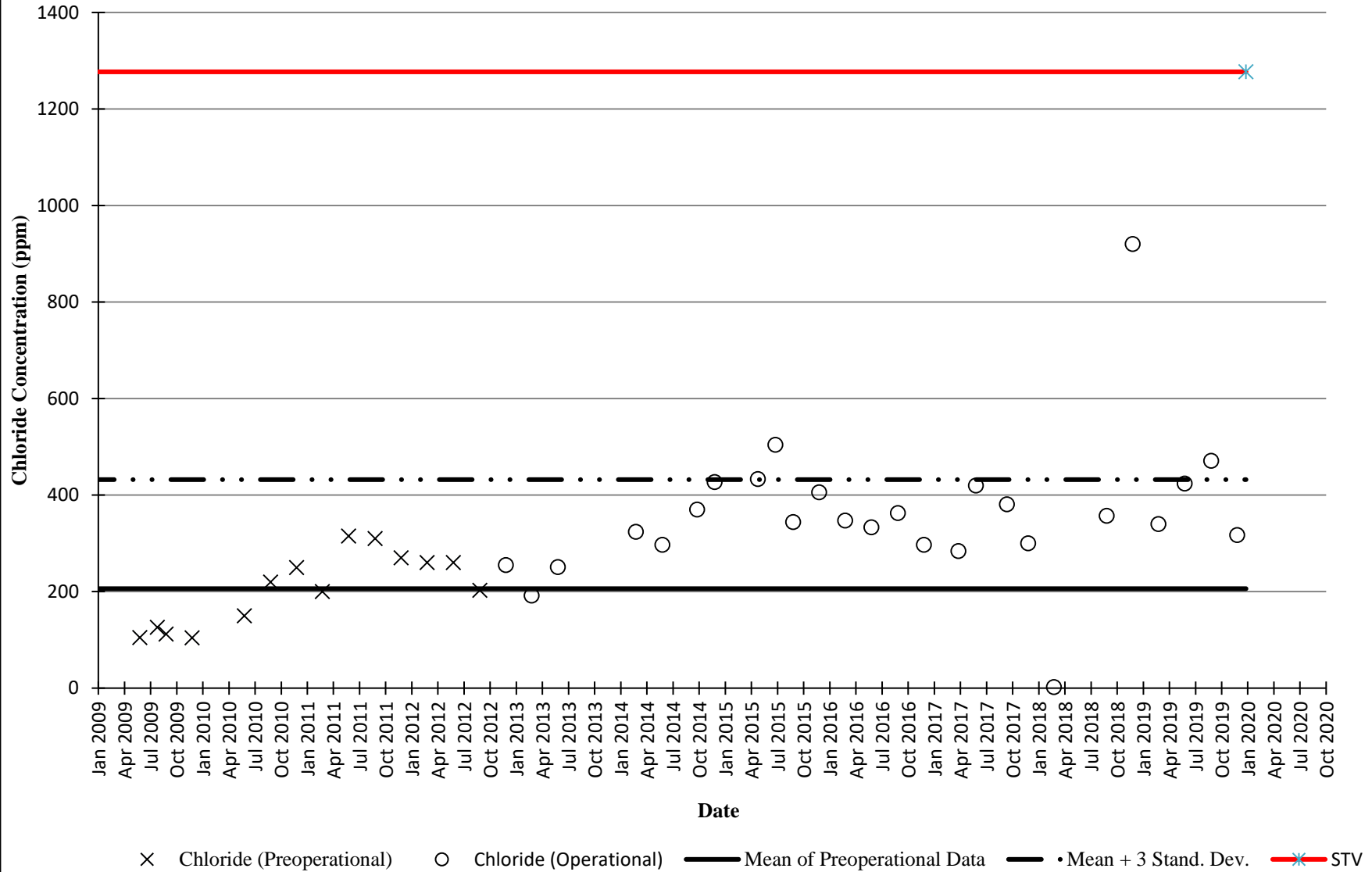
Indicates suspected erroneous data

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - Hardness

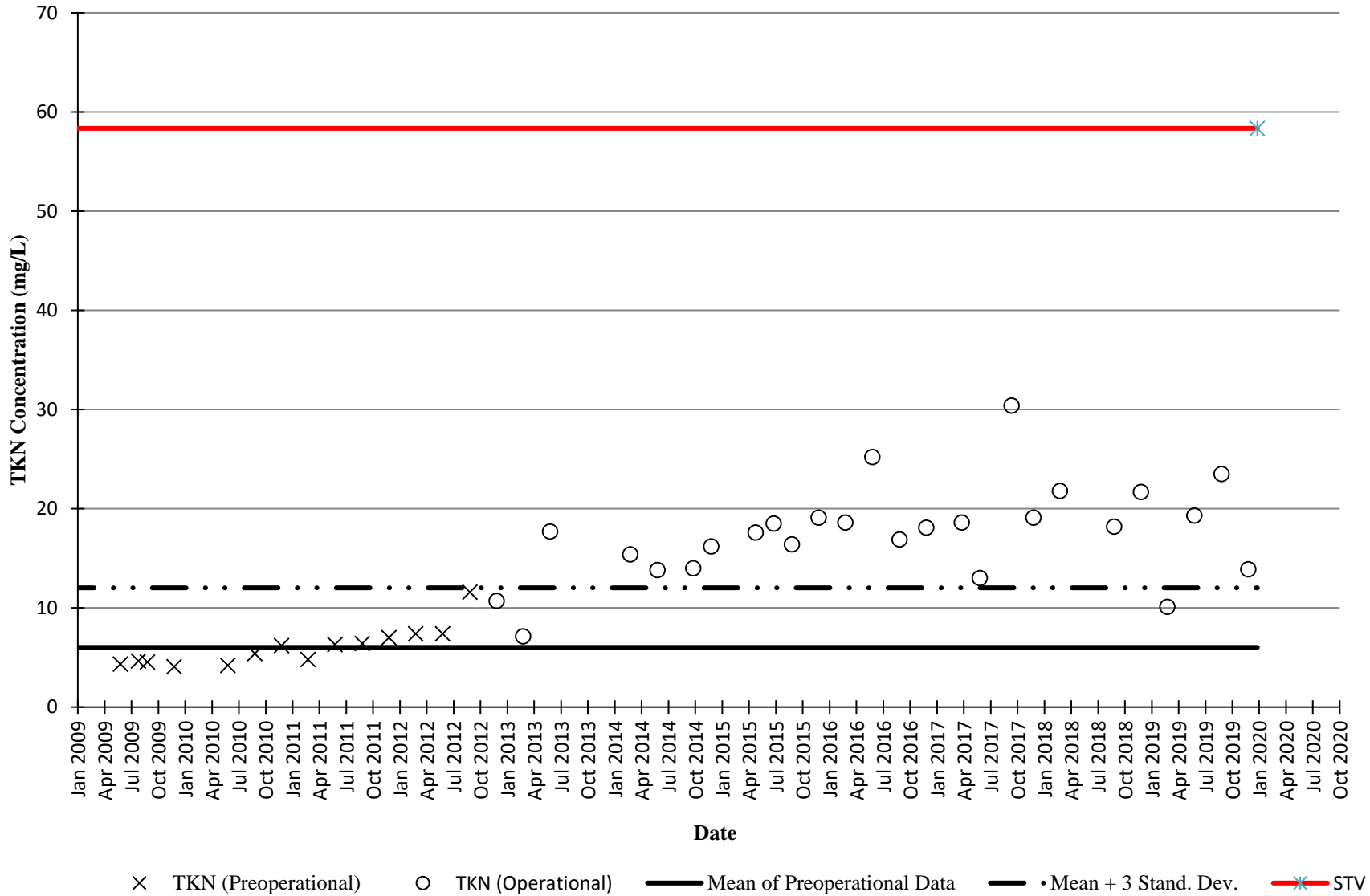


× Hardness (Preoperational)    ○ Hardness (Operational)    — Mean of Preoperational Data    - · - Mean + 3 Stand. Dev.    —\*— STV

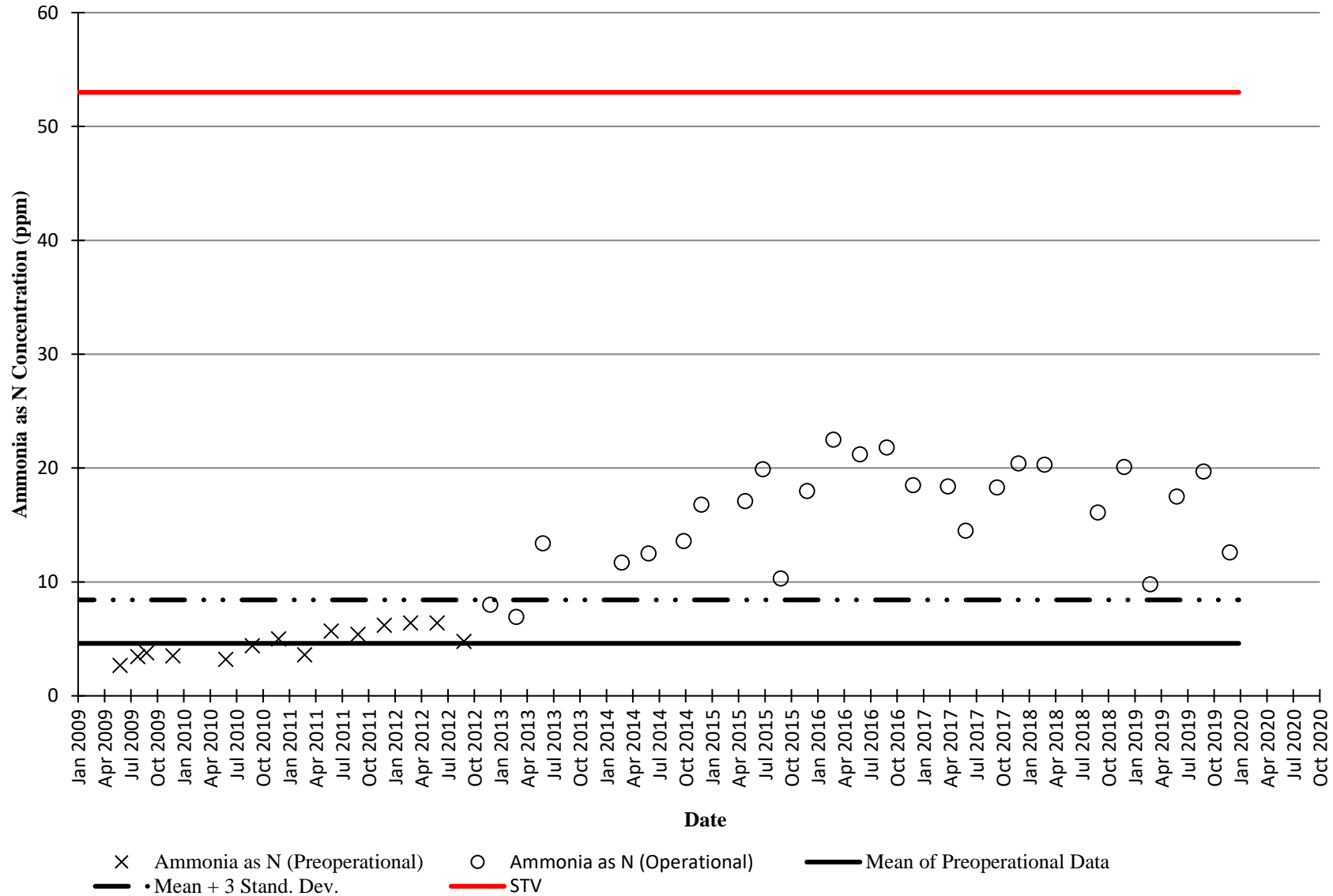
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - Chloride



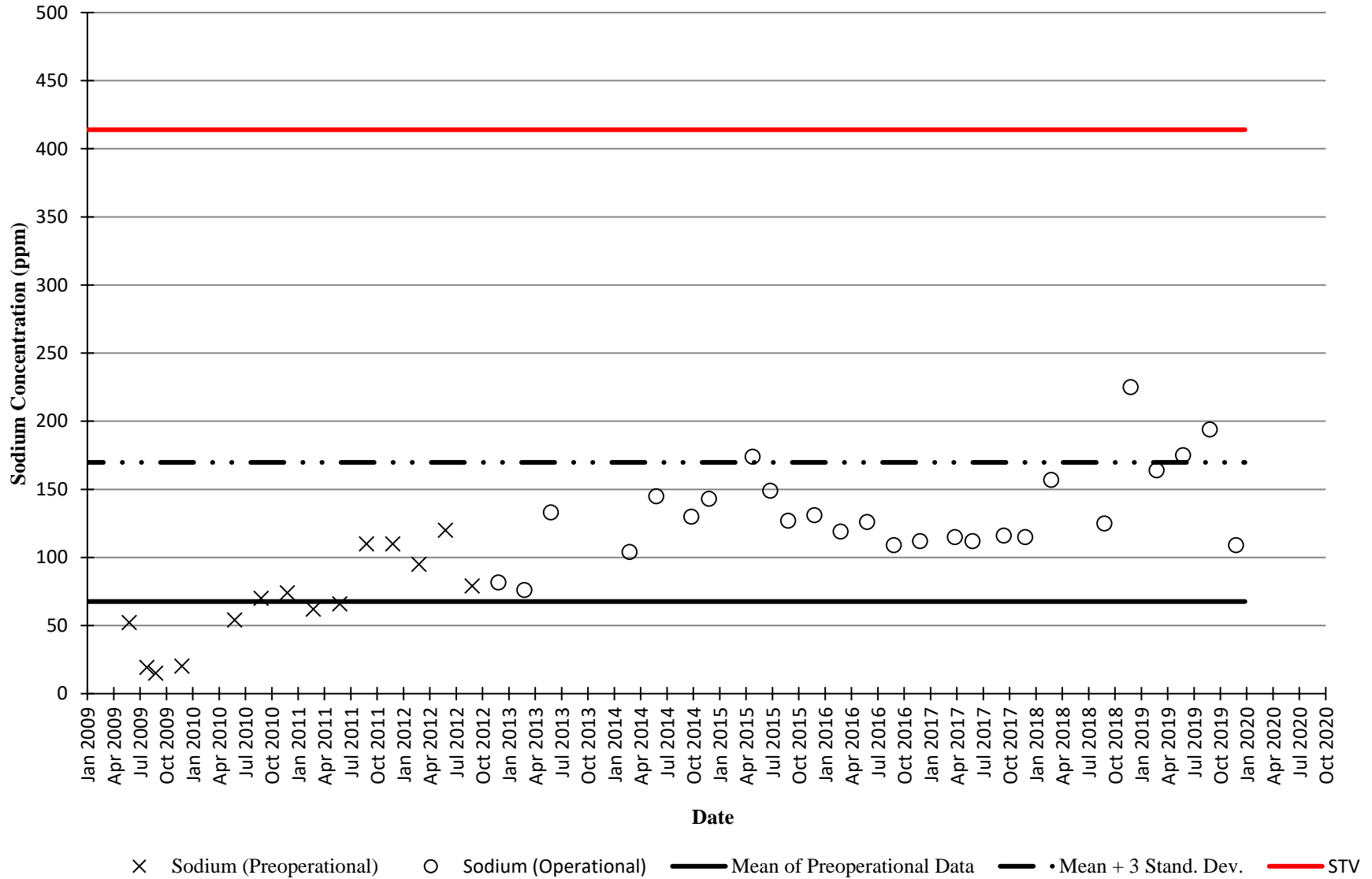
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - TKN



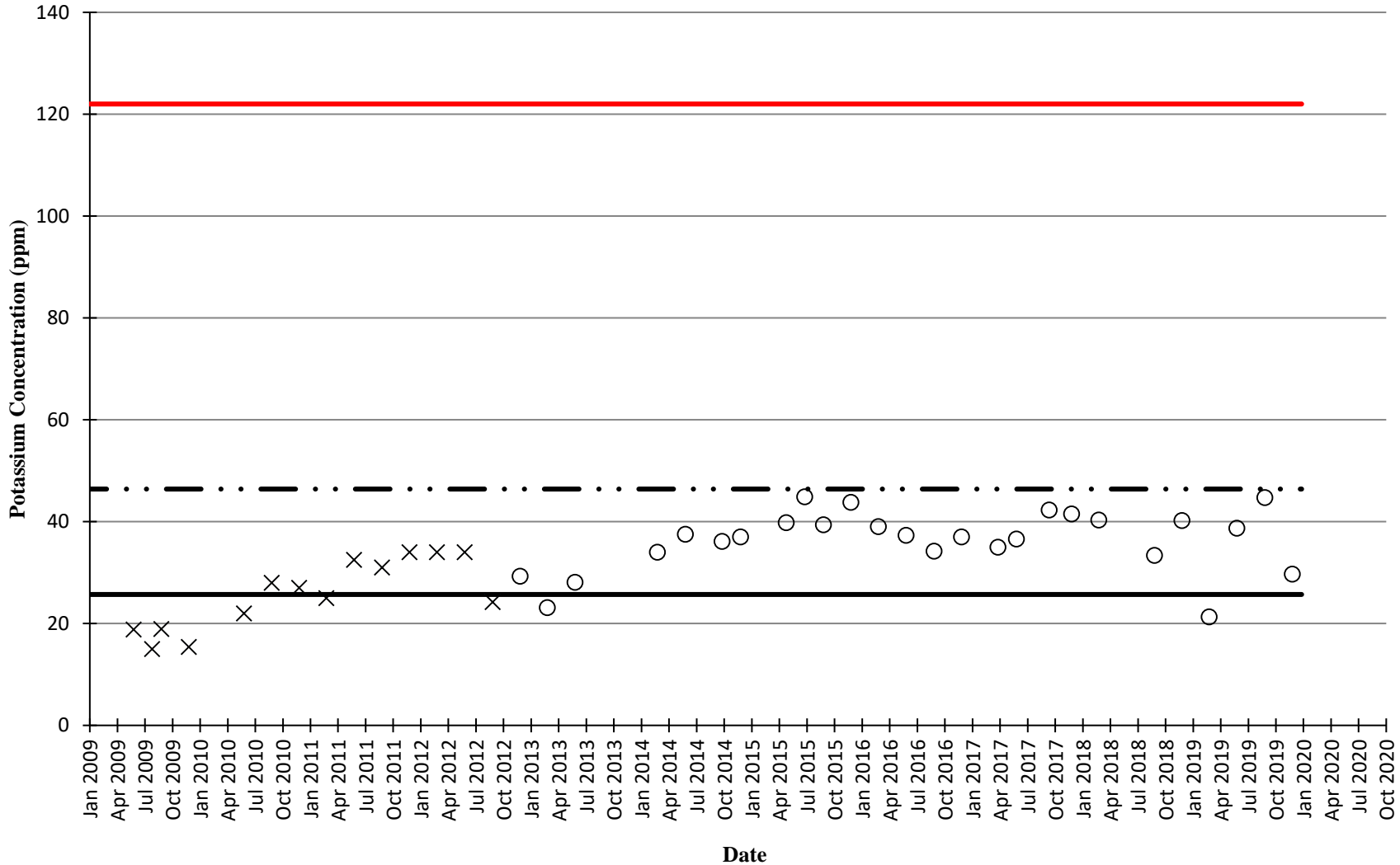
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - Ammonia as N



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - Sodium



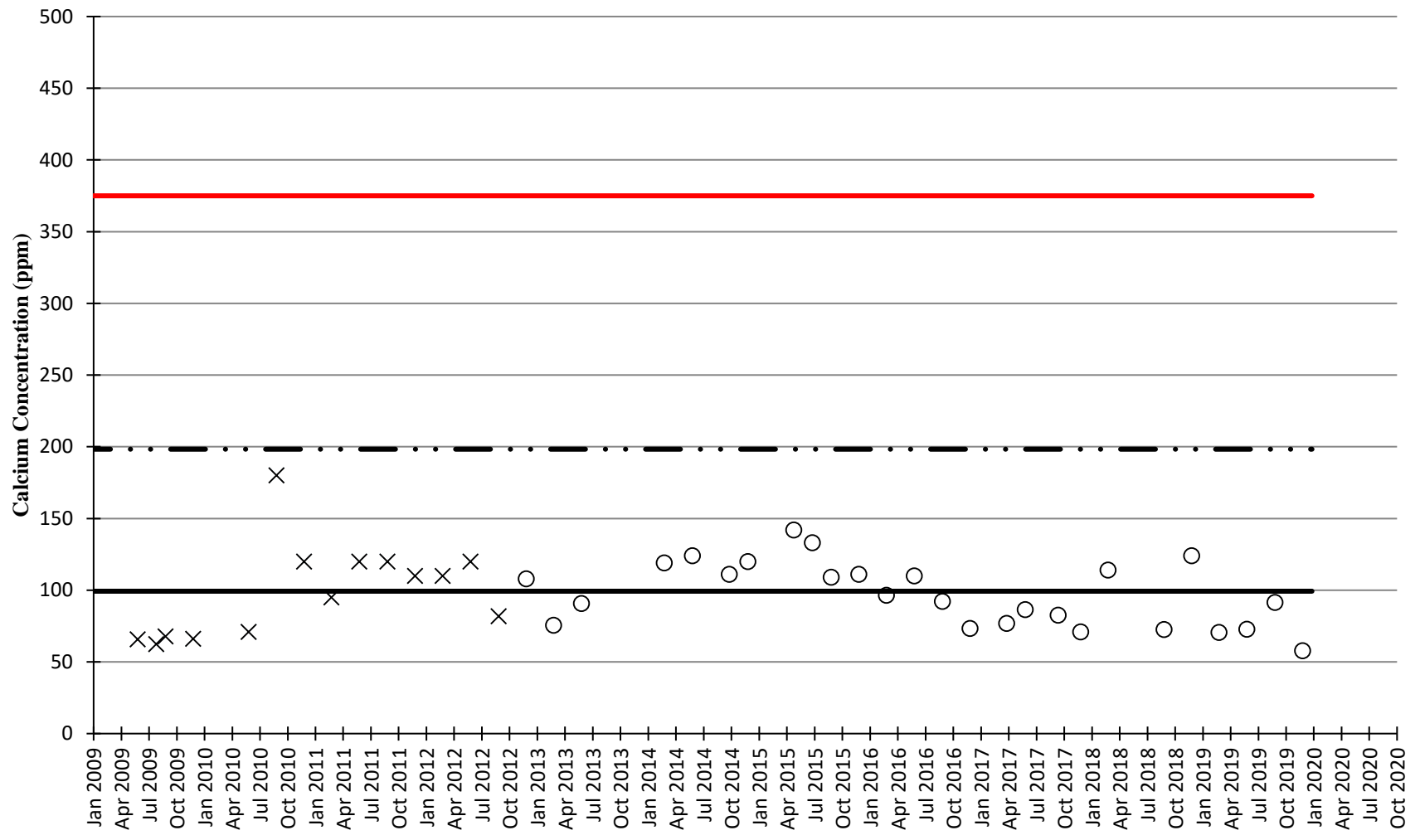
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - Potassium



× Potassium (Preoperational)    ○ Potassium (Operational)    — Mean of Preoperational Data    - - - Mean + 3 Stand. Dev.    — STV



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 27i Existing Water Quality and Statistical Trigger - Calcium



× Calcium (Preoperational)    ○ Calcium (Operational)    — Mean of Preoperational Data    -•- Mean + 3 Stand. Dev.    — STV

Analyte	Units	Dec 2012	Mar 2013	Jun 2013	Mar 2014	Jun 2014	Oct 2014	Dec 2014	May 2015	Jul 2015	Sep 2015	Dec 2015	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Apr 2017	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Sep 2018	Dec 2018	Mar 2019	Jun 2019	Sep 2019	Dec 2019
Hardness (Operational)	ppm	520	680	480	380	460	500	380	1200	160	300	304	420	310	260	280	260	440	400	180	580	470	430	1240	880	600	900
Chloride (Operational)	ppm	202	331	151	274	274	263	225	256	166	312	294	294	267	323	316	183	422	398	322	141	352	259	217	256	303	318
TKN (Operational)	mg/L	31.6	32.3	19.5	29.1	19	21.3	19.8	18.7	9.85	23	25.1	21.7	41	32.5	27.1	5.9	45.4	55.3	36.8	9.3	34.4	28	10.8	20.9	32.3	38.6
Ammonia as N (Operational)	ppm	23.6	26.1	17.1	26.1	17.2	20.4	19.7	17.8	10.5	25.6	23.6	26.5	27.7	38.5	27	6.2	29.6	34.8	34.6	8.7	17.4	25.3	8.8	18.2	28.3	23.5
Sodium (Operational)	ppm	179	206	100	183	200	224	173	197	80.9	216	233	213	217	214	221	85.8	262	239	234	83	236	206	197	186	210	187
Potassium (Operational)	ppm	54.6	53.8	36	60.5	46.8	52.8	43	44.6	63.2	48.7	55.3	59.6	57.5	55.7	54.1	56.2	76.1	87.4	96.2	57.4	48.6	59.2	58.2	51.2	66.7	87.3
Calcium (Operational)	ppm	170	201	158	120	164	130	131	196	62.2	105	106	158	116	95.9	96.6	58.9	200	136	109	262	167	157	384	248	213	187

Well 28 Preoperational Data																		
Analyte	Units	Jun 2009	Aug 2009	Sep 2009	Dec 2009	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012	Sep 2012	Mean(M)	stan dev(sd)	M+(3sd)
Hardness (Preoperational)	ppm	295	334	374	382	940	660	500	580	830	670	800	610	560	530	576.07	193.82	1157.53
Chloride (Preoperational)	ppm	85.6	112	122	123	260	240	250	300	330	170	280	310	300	324	229.04	87.89	492.70
TKN (Preoperational)	mg/L	10.3	6.04	5.9	7.7	14	16	28	36	27	8.4	25	28	40	39	20.81	12.51	58.35
Ammonia as N (Preoperational)	ppm	6.04	4.52	4.66	8.05	5.2	14	26	34	26	8.4	24	26	38	24.4	17.81	11.76	53.09
Sodium (Preoperational)	ppm	60.6	22	18.8	27.5	140	190	200	220	230	110	230	240	220	225	152.42	87.11	413.74
Potassium (Preoperational)	ppm	33	23.5	28	23.2	58	54	60	72	87	39	74	74	85	59.9	55.04	22.30	121.95
Calcium (Preoperational)	ppm	99.3	120	134	137	290	220	180	200	280	230	260	200	120	183	189.52	61.90	375.23

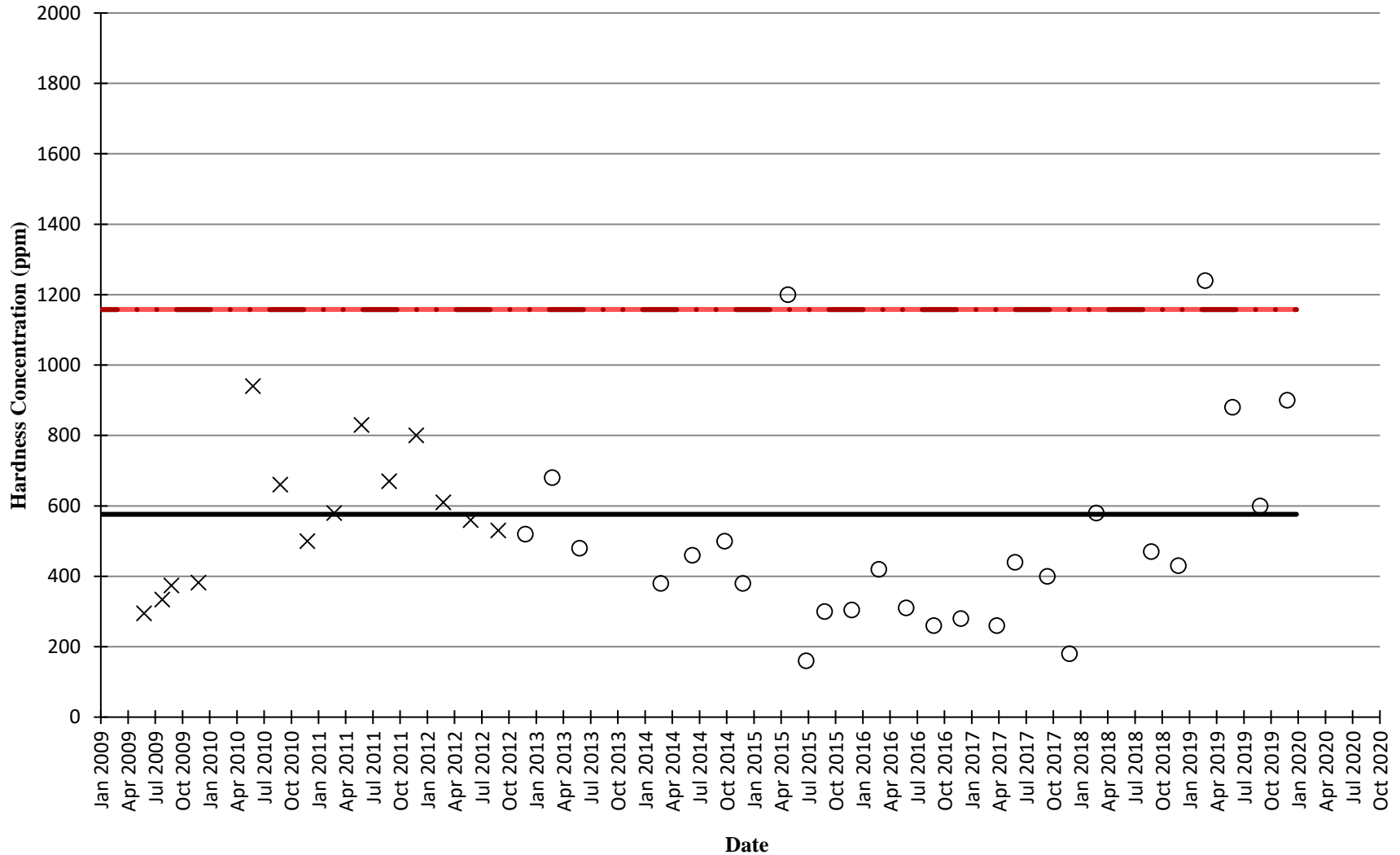
Mean	Mean
Jan 2008	Jan 2020
576.07	576.07
229.04	229.04
20.81	20.81
17.81	17.81
152.42	152.42
55.04	55.04
189.52	189.52

M+3sd	M+3sd
Jan 2008	Jan 2020
1157.53	1157.53
492.70	492.70
58.35	58.35
53.09	53.09
413.74	413.74
121.95	121.95
375.23	375.23

STV	STV
Jan 2008	Jan 2020
1158.00	1158.00
1277.00	1277.00
58.35	58.35
53.00	53.00
414.00	414.00
122.00	122.00
375.00	375.00

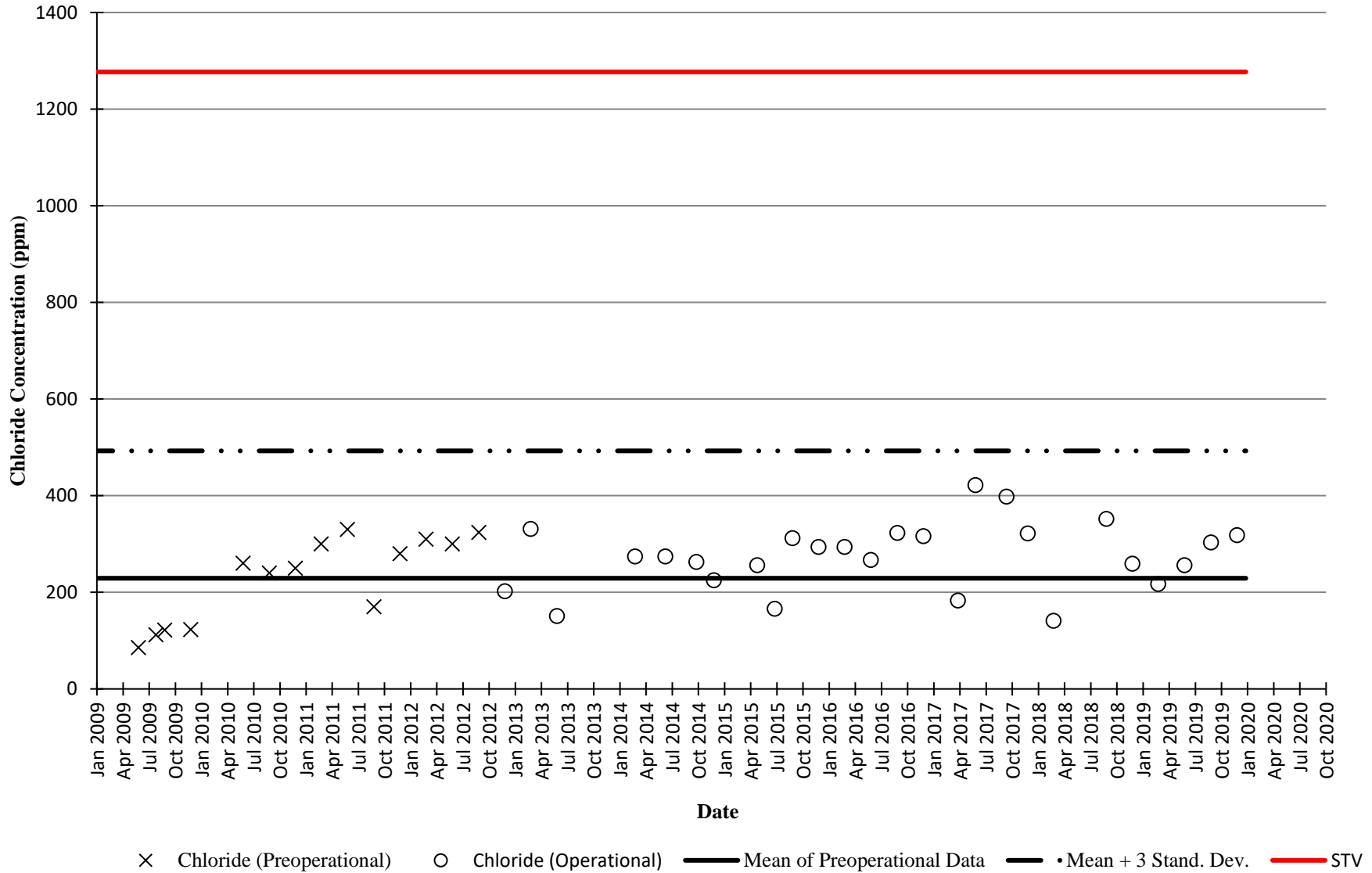
Indicates sample is below detection limit  
Indicates sample is above Mean + 3 Standard Deviations  
Indicates sample exceeds overall STV

# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - Hardness

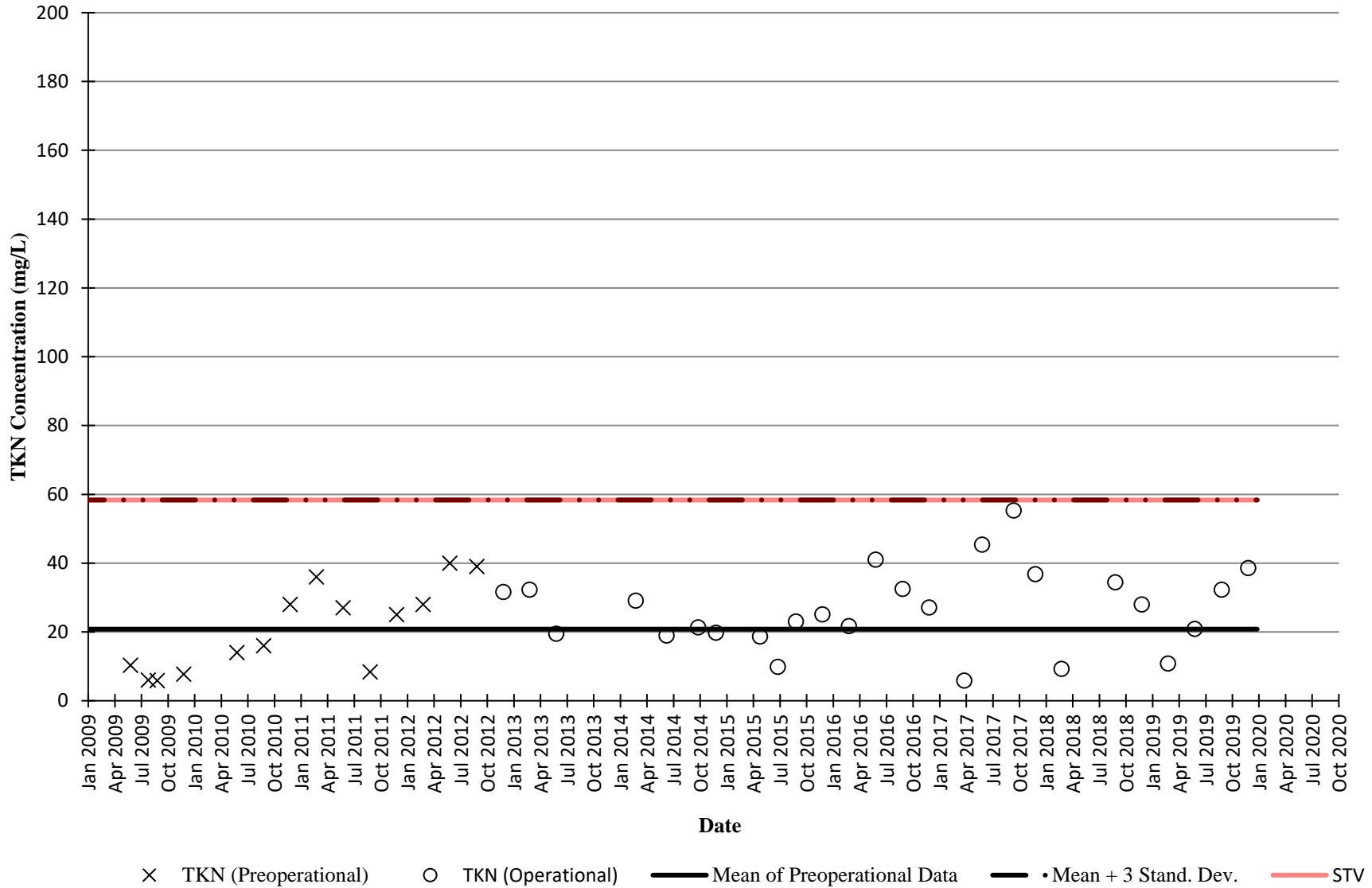


× Hardness (Preoperational)    ○ Hardness (Operational)    — Mean of Preoperational Data    — • Mean + 3 Stand. Dev.    - - - STV

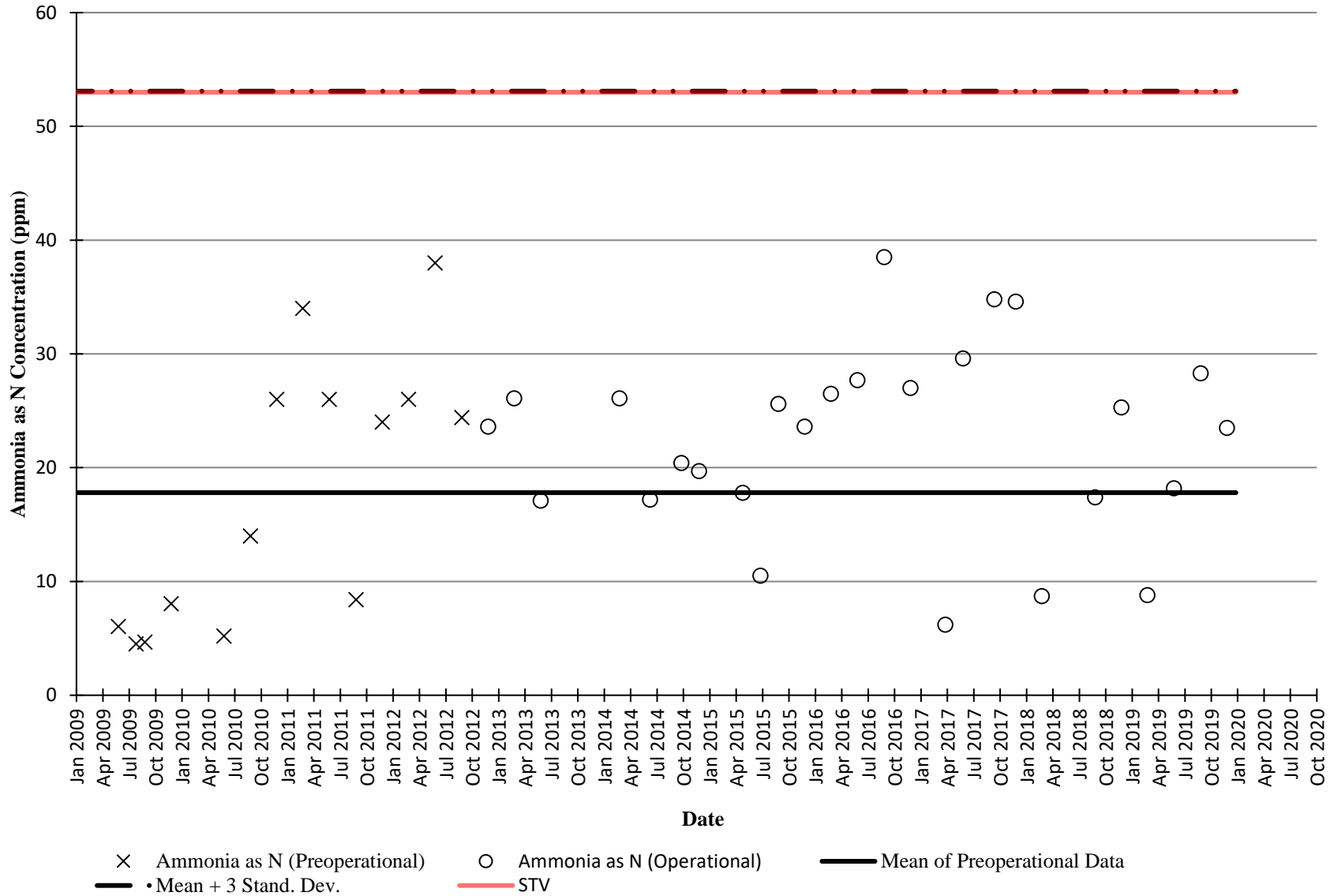
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - Chloride



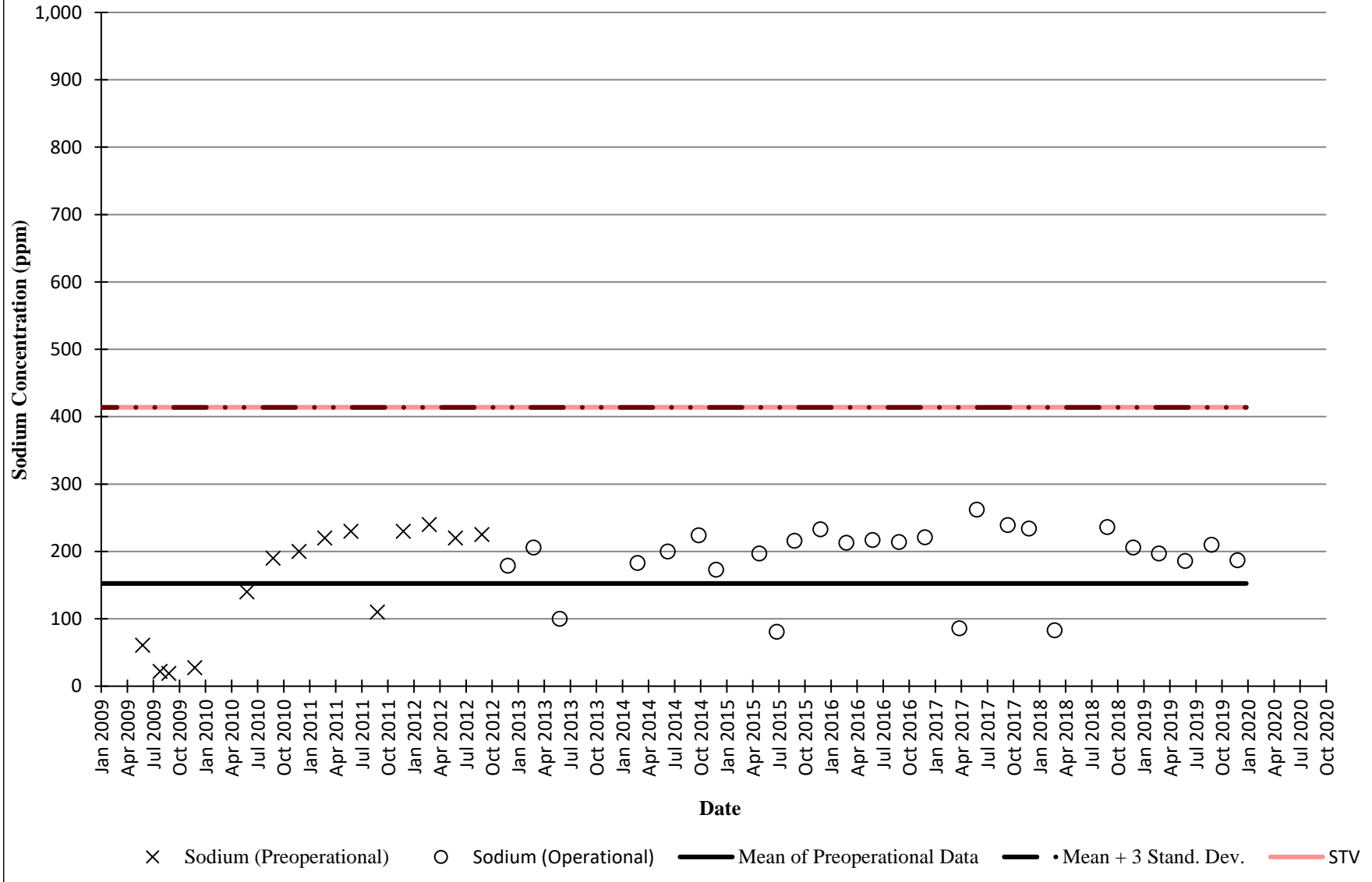
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - TKN



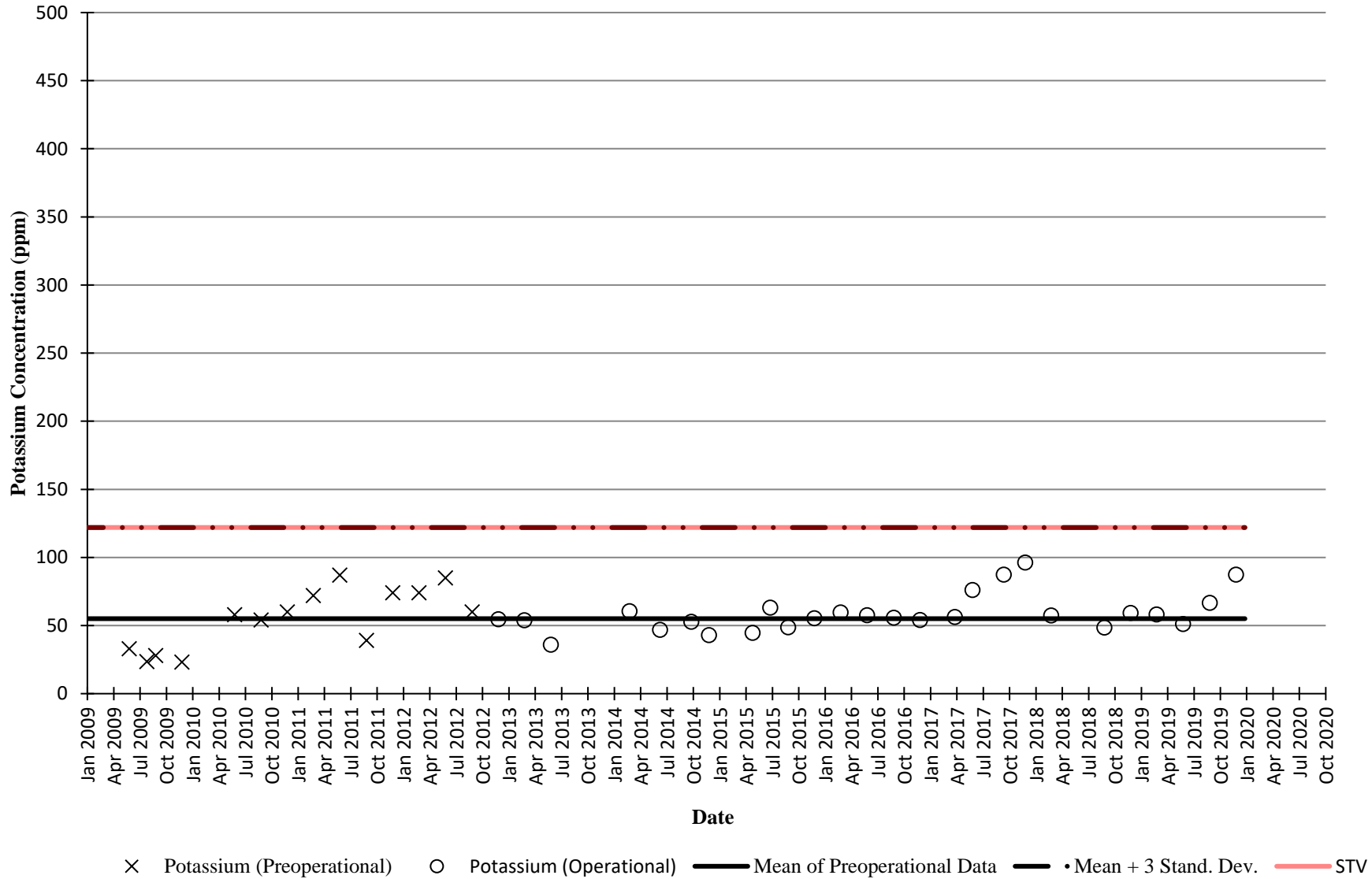
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - Ammonia as N



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - Sodium

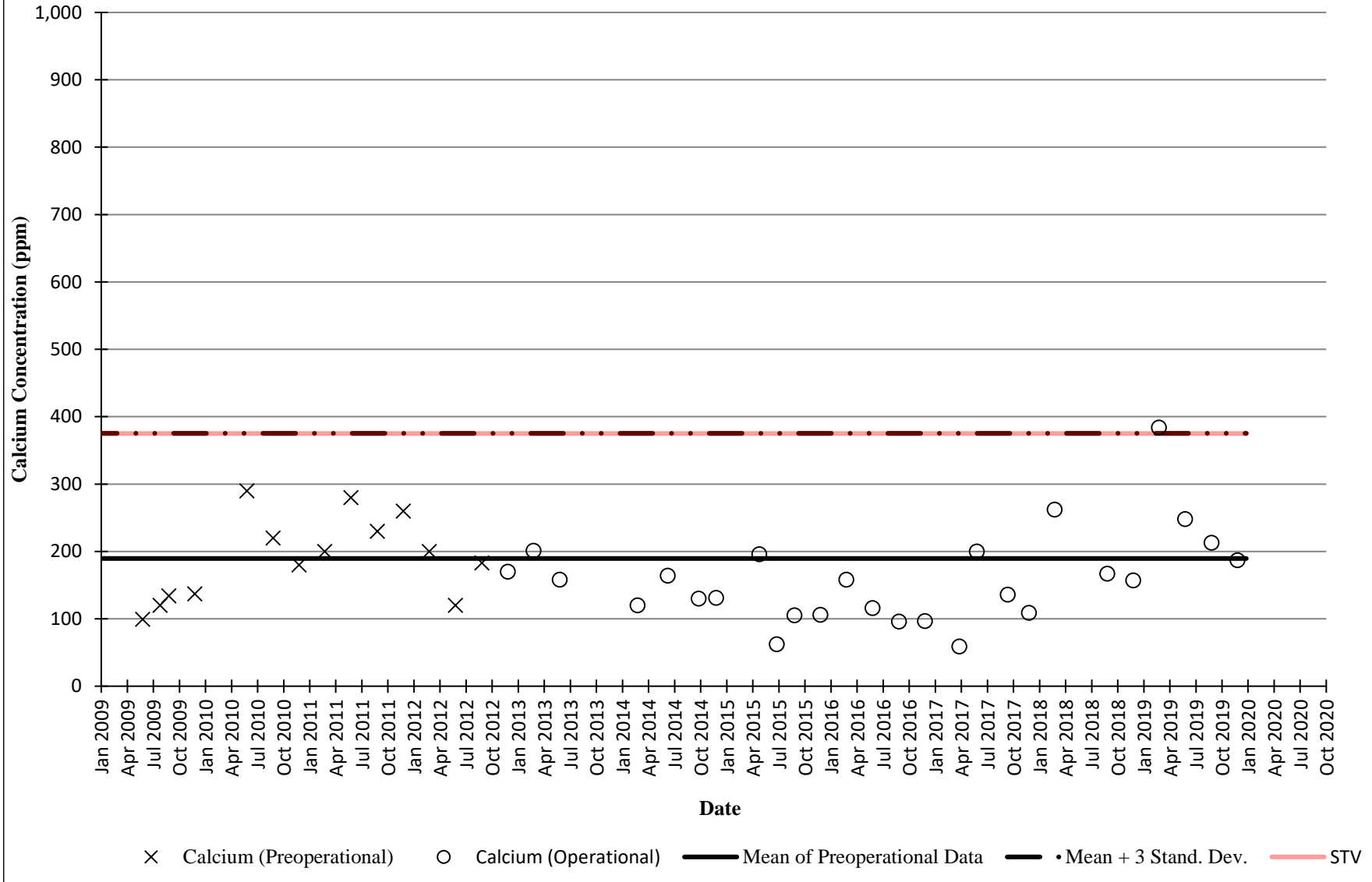


# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - Potassium





# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28 Existing Water Quality and Statistical Trigger - Calcium



Well 28i Operational Data																											
Analyte	Units	Dec 2012	Mar 2013	Jun 2013	Mar 2014	Jun 2014	Oct 2014	Dec 2014	May 2015	Jul 2015	Sep 2015	Dec 2015	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Apr 2017	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Sep 2018	Dec 2018	Mar 2019	Jun 2019	Sep 2019	Dec 2019
Hardness (Operational)	ppm	110	130	100	132	130	250	280	120	360	160	168	180	128	180	160	390	132	140	127	113	120	96	92	100	147	110
Chloride (Operational)	ppm	139	224	118	232	205	224	231	201	266	222	205	176	170	213	165	299	261	215	187	215	172	174	248	251	235	183
TKN (Operational)	mg/L	26	23.1	10.9	24.3	14.5	11.4	6.81	11	21.6	12.1	13	7.2	14.7	5.6	4.7	31.3	5.7	9.2	4.3	8	24.8	32.5	3.8	12.2	13	7.1
Ammonia as N (Operational)	ppm	19.7	20.2	9.06	20.1	13.1	9.28	7.58	11.3	22.4	13.8	13.5	9.24	11	6.4	5.6	31.2	7.8	5.4	3.6	7.1	6.8	12.3	7.3	11.4	9.7	3.7
Sodium (Operational)	ppm	96.4	102	67.3	109	92.5	97.1	86	86.5	219	111	95.3	68.8	89.2	75.2	62.6	219	92.2	78.3	84.8	92.8	85.2	88.5	85.2	114	102	74.8
Potassium (Operational)	ppm	77.8	81.8	80.4	85.2	71.7	76.5	66.7	64.2	56.4	73.4	73.5	59.8	59.2	41.4	46.4	60	58	47.7	49.8	57.5	40.5	54.4	42.7	62.6	69.9	47.7
Calcium (Operational)	ppm	24.2	30.7	37.1	49.6	45.4	53.9	62.3	55	138	60.4	58.1	47	53.7	61	50.5	111	44	45.9	53.2	49.2	41.5	35.5	35.3	39.6	53	36.7

Well 28i Preoperational Data																		
Analyte	Units	Jun 2009	Aug 2009	Sep 2009	Dec 2009	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012	Sep 2012	Mean(M)	stan dev(sd)	M+(3sd)
Hardness (Preoperational)	ppm	124	152	150	120	110	180	170	150	120	120	80	110	130	104	130.00	27.31	211.93
Chloride (Preoperational)	ppm	97	108	100	109	130	140	110	96	140	140	150	110	100	136	119.00	19.24	176.72
TKN (Preoperational)	mg/L	5.4	3.54	3.98	5.6	12	14	13	9.8	14	15	18	14	11	18.3	10.36	5.51	26.89
Ammonia as N (Preoperational)	ppm	3.51	2.62	2.66	6	11	13	11	9	14	14	17	13	10	11.2	9.86	4.55	23.52
Sodium (Preoperational)	ppm	68.2	19.2	16.2	25.3	60	69	74	59	84	87	82	67	57	69.6	59.82	23.32	129.79
Potassium (Preoperational)	ppm	41.6	30.3	36.6	28.6	54	53	60	46	63	64	73	96	65	61.1	55.16	18.02	109.23
Calcium (Preoperational)	ppm	46	56.1	55	43.3	40	65	62	53	43	41	29	40	44	32.3	46.41	10.53	77.99

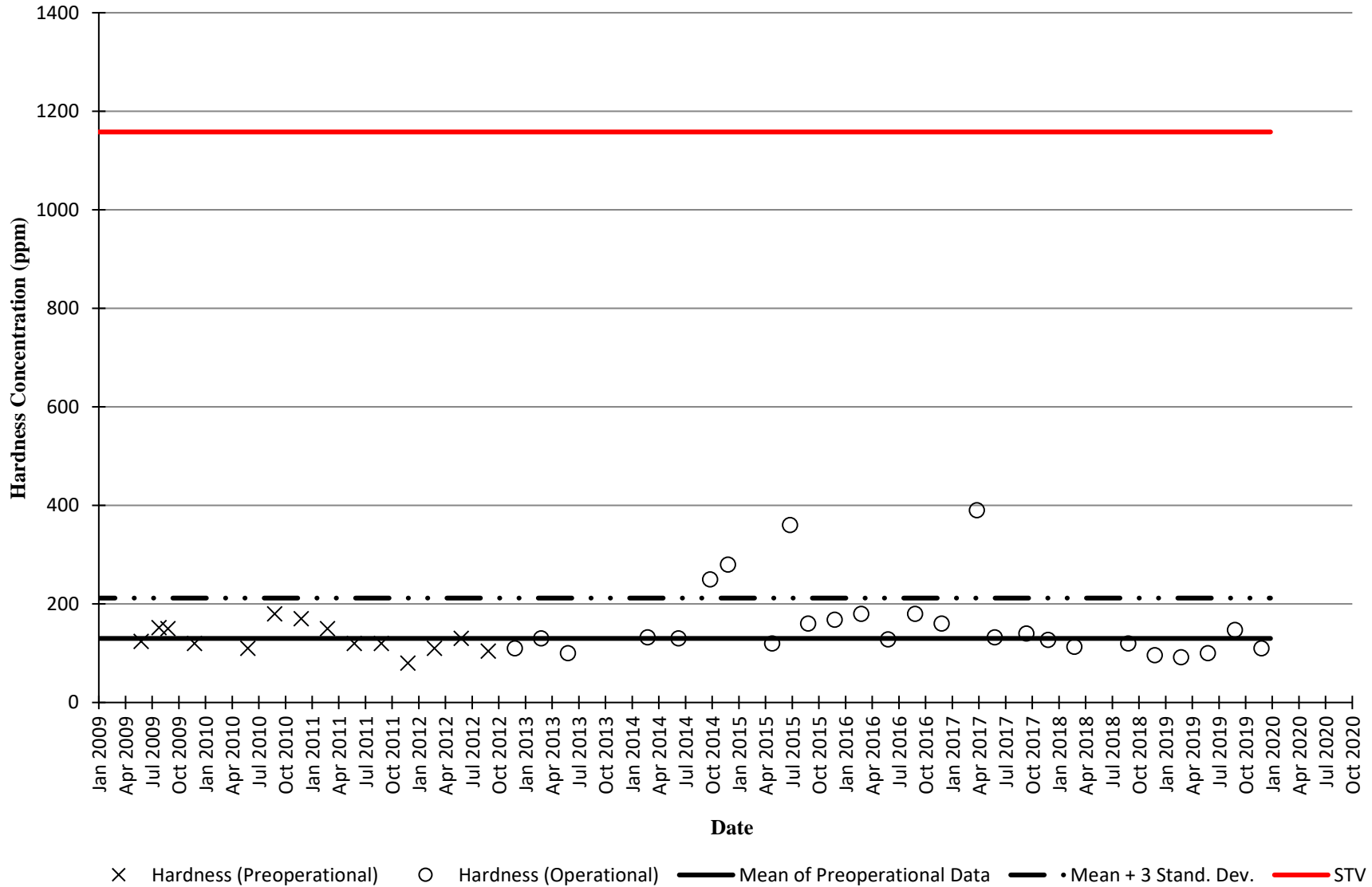
Mean	Mean
Jan 2008	Jan 2020
130.00	130.00
119.00	119.00
10.36	10.36
9.86	9.86
59.82	59.82
55.16	55.16
46.41	46.41

M+3sd	M+3sd
Jan 2008	Jan 2020
211.93	211.93
176.72	176.72
26.89	26.89
23.52	23.52
129.79	129.79
109.23	109.23
77.99	77.99

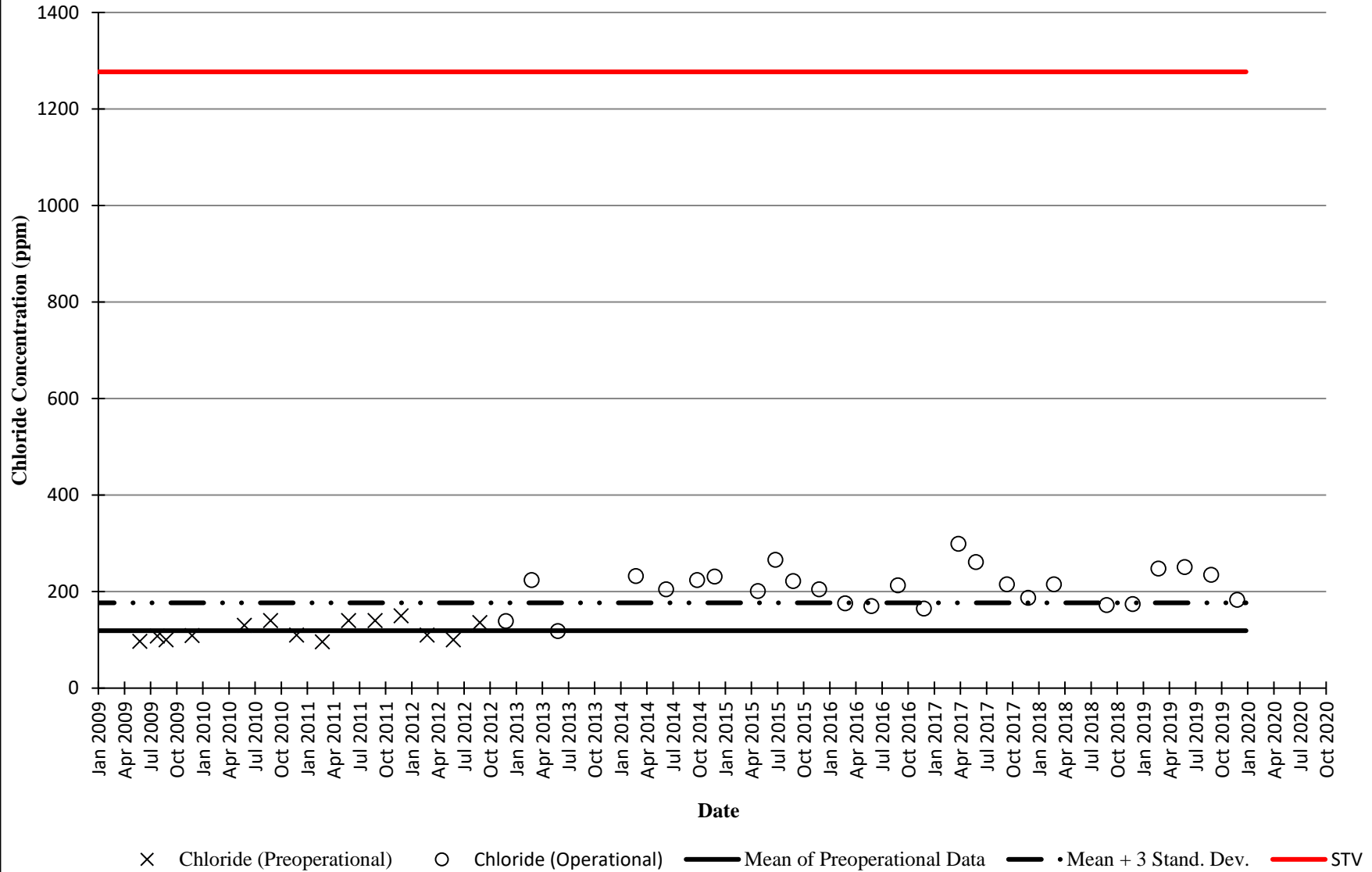
STV	STV
Jan 2008	Jan 2020
1158.00	1158.00
1277.00	1277.00
58.35	58.35
53.00	53.00
414.00	414.00
122.00	122.00
375.00	375.00

Indicates sample is below detection limit  
 Indicates sample is above Mean + 3 Standard Deviations  
 Indicates sample exceeds overall STV

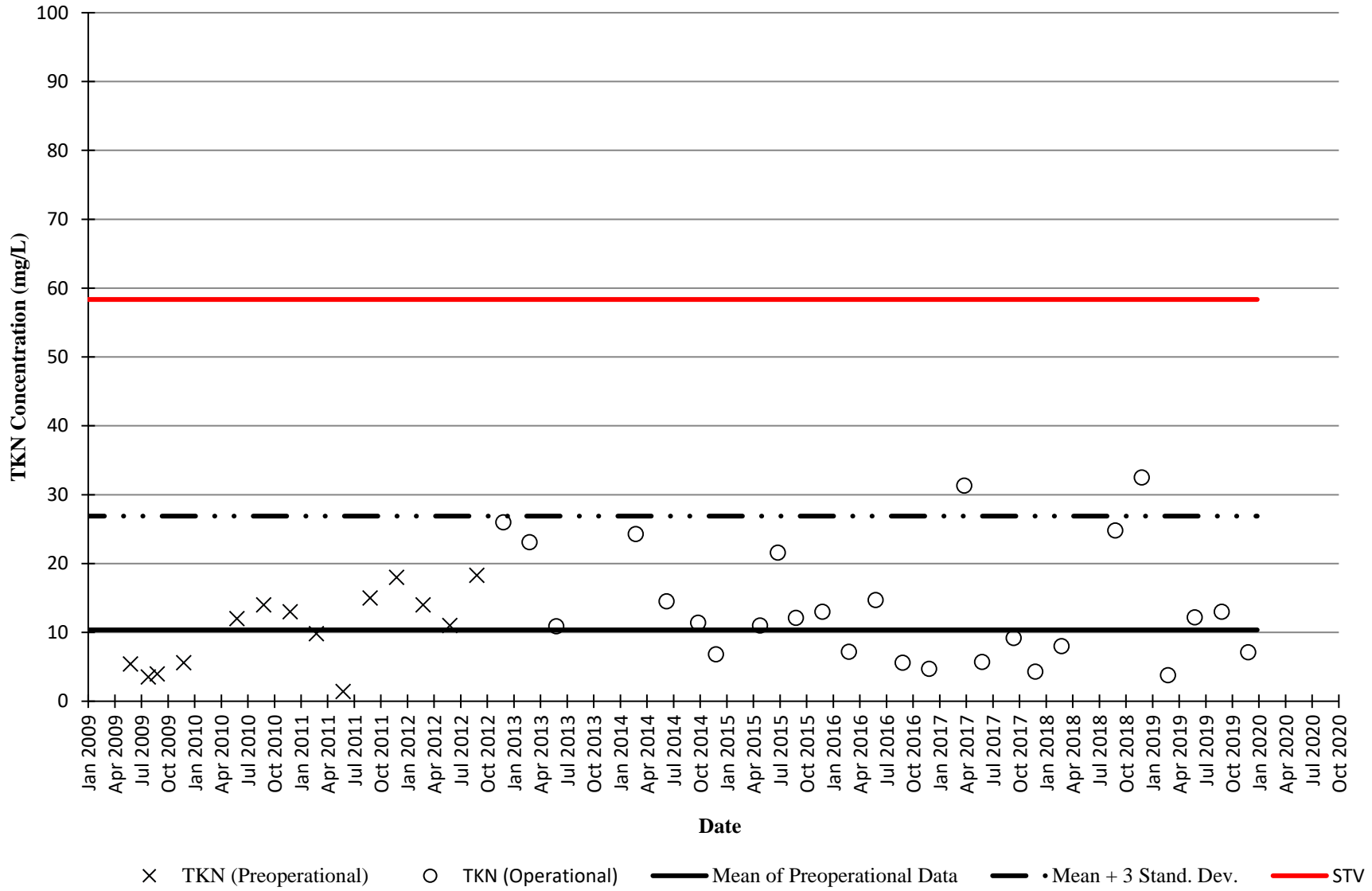
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - Hardness



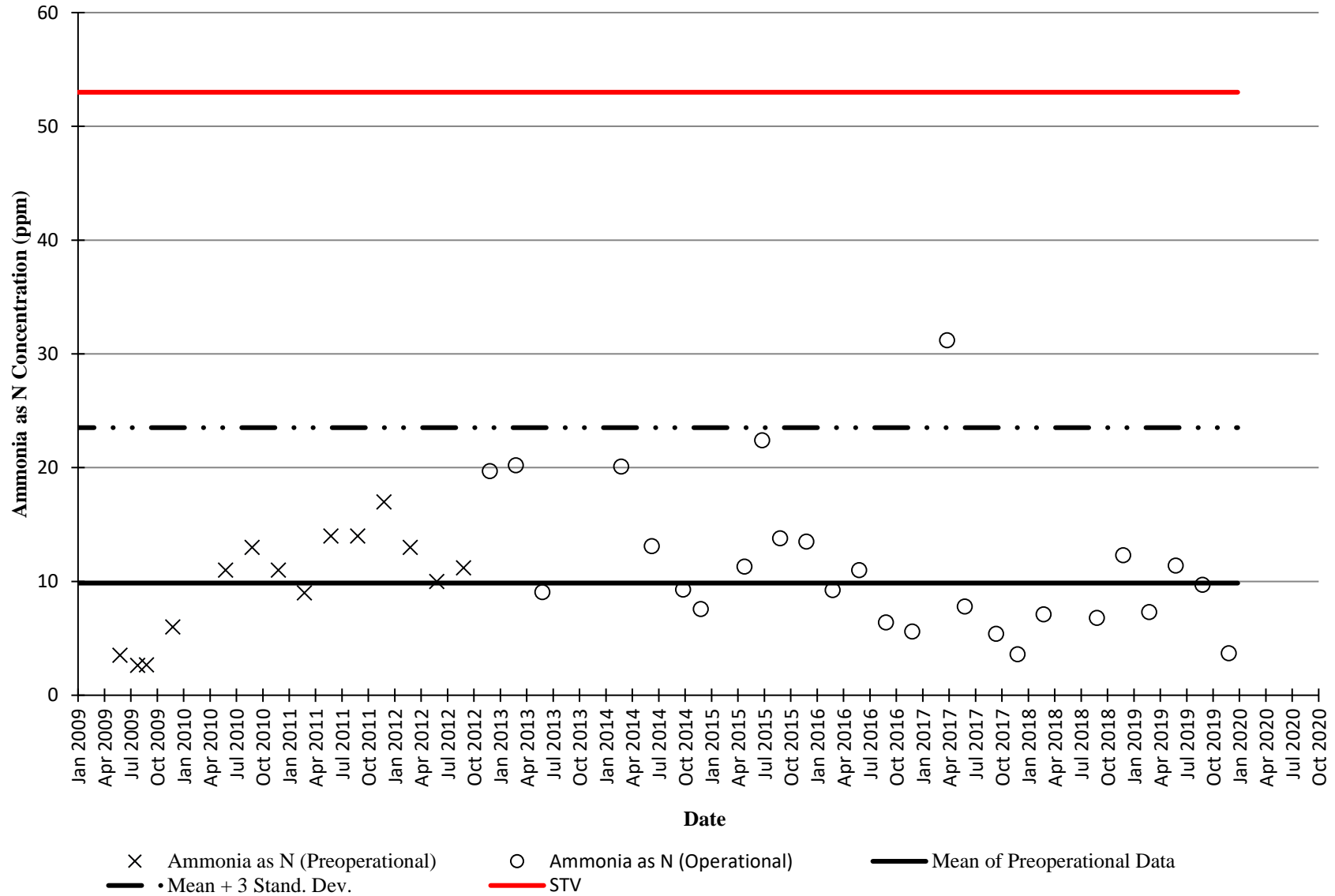
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - Chloride



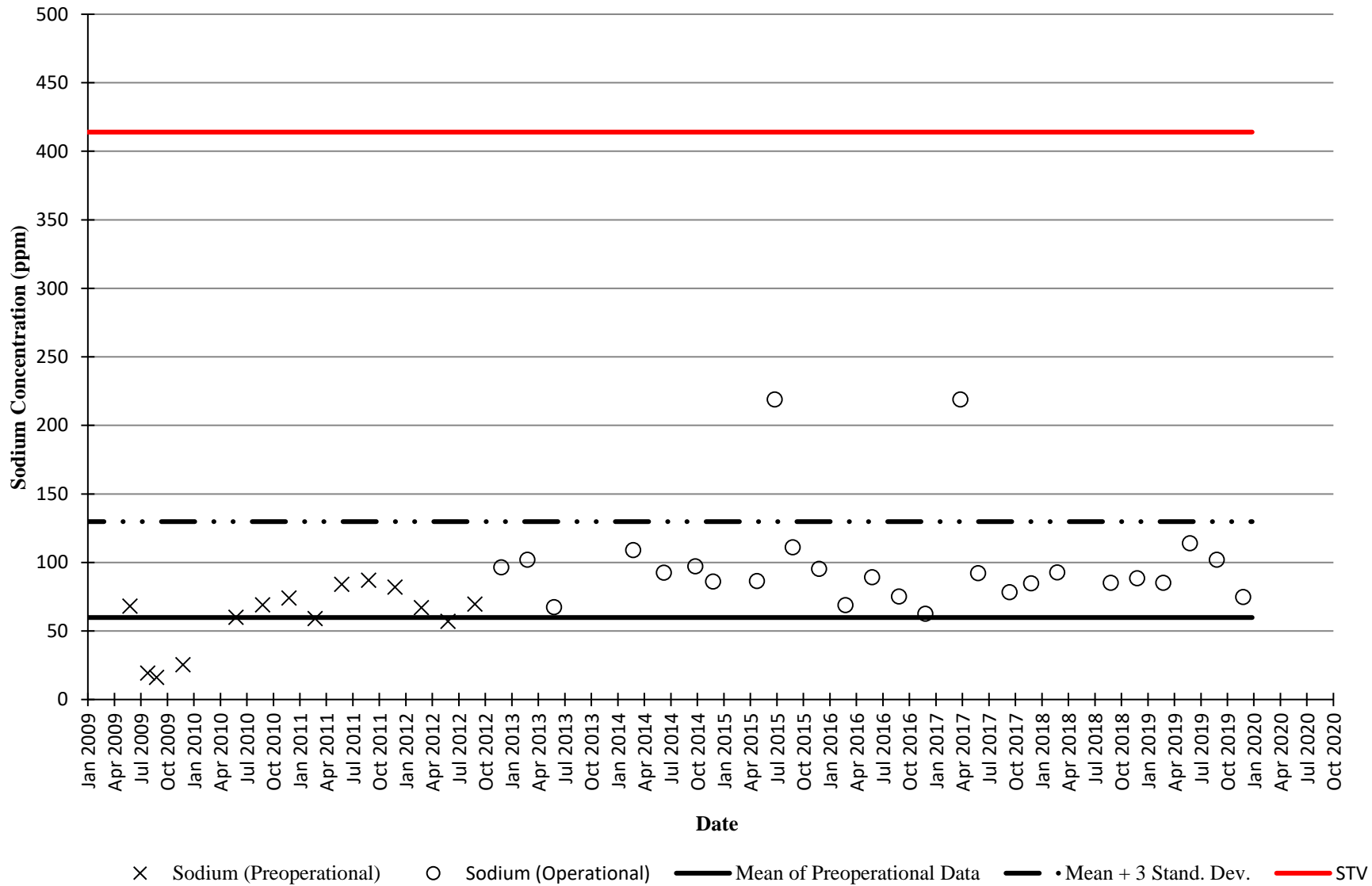
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - TKN



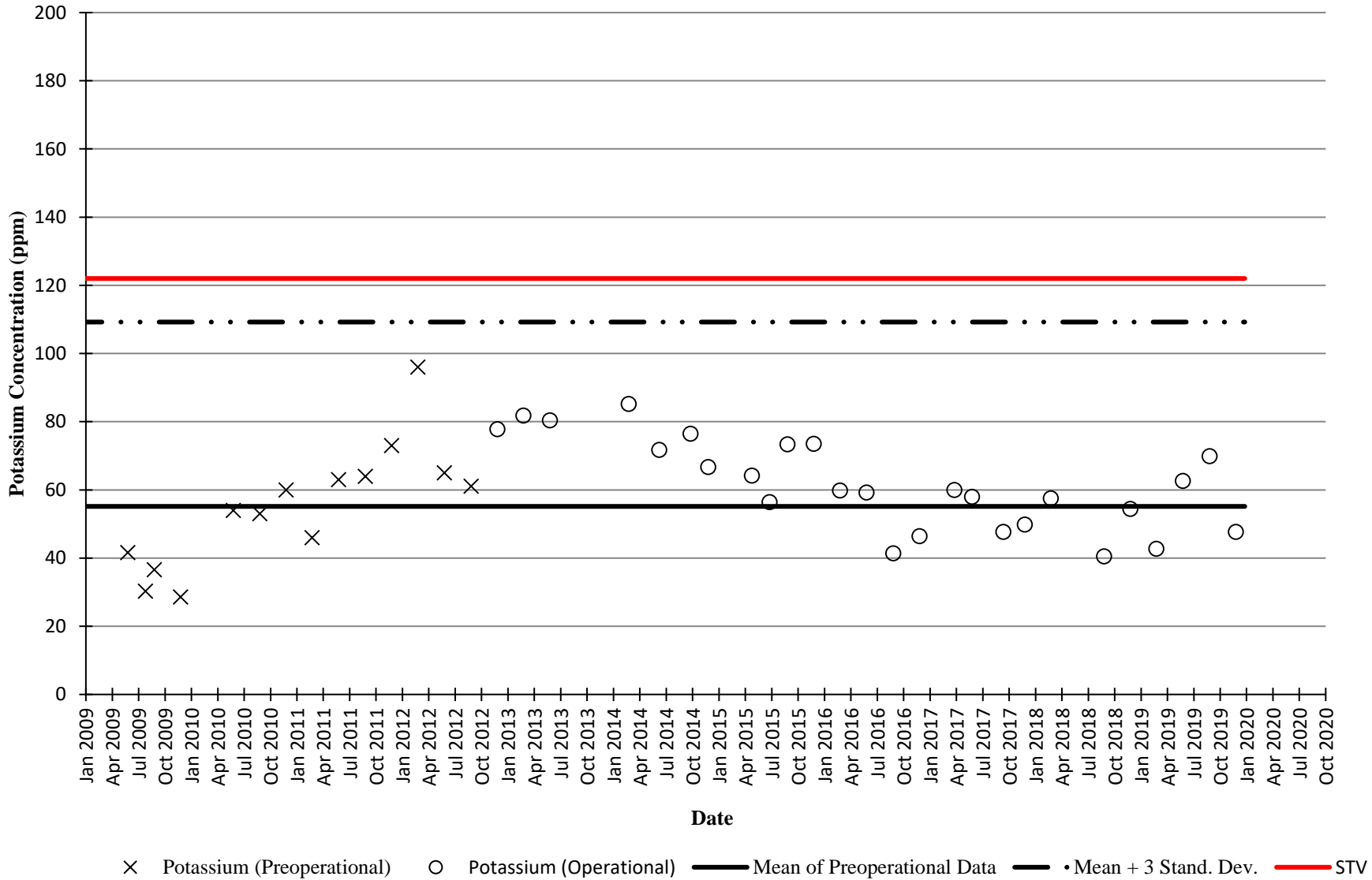
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - Ammonia as N



# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - Sodium

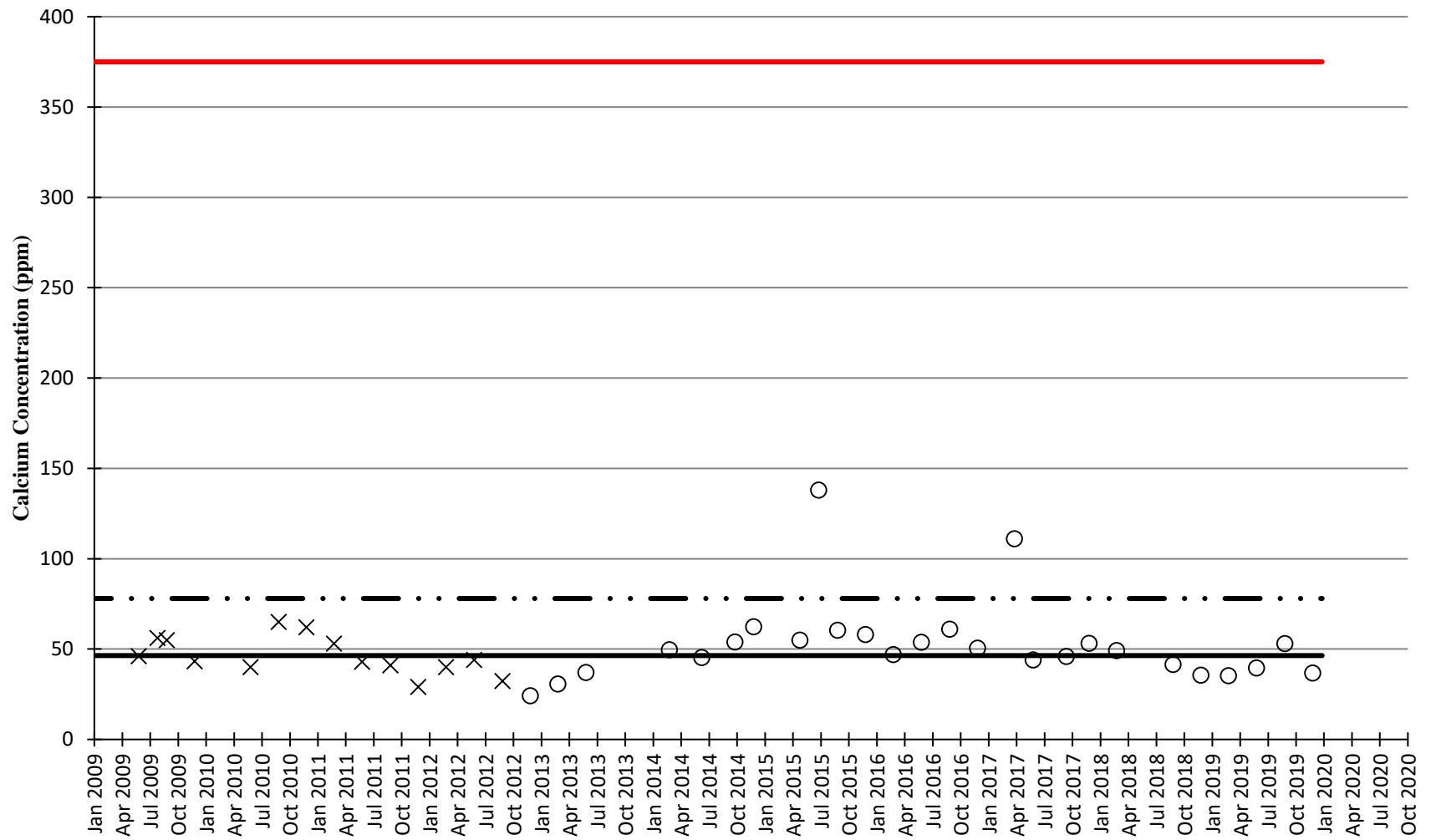


# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - Potassium





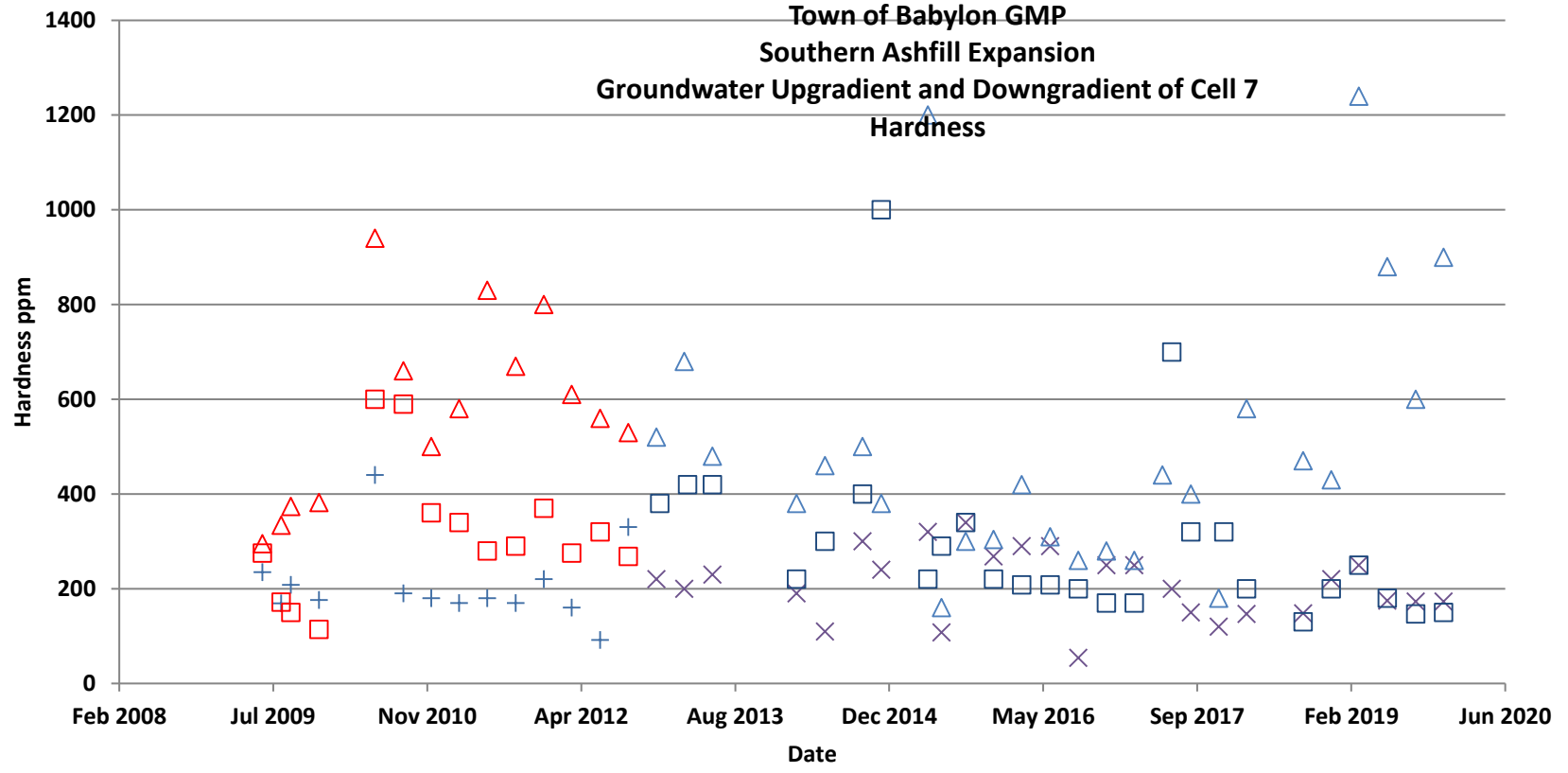
# Town of Babylon Southern Ashfill Expansion Groundwater Monitoring Program Well 28i Existing Water Quality and Statistical Trigger - Calcium



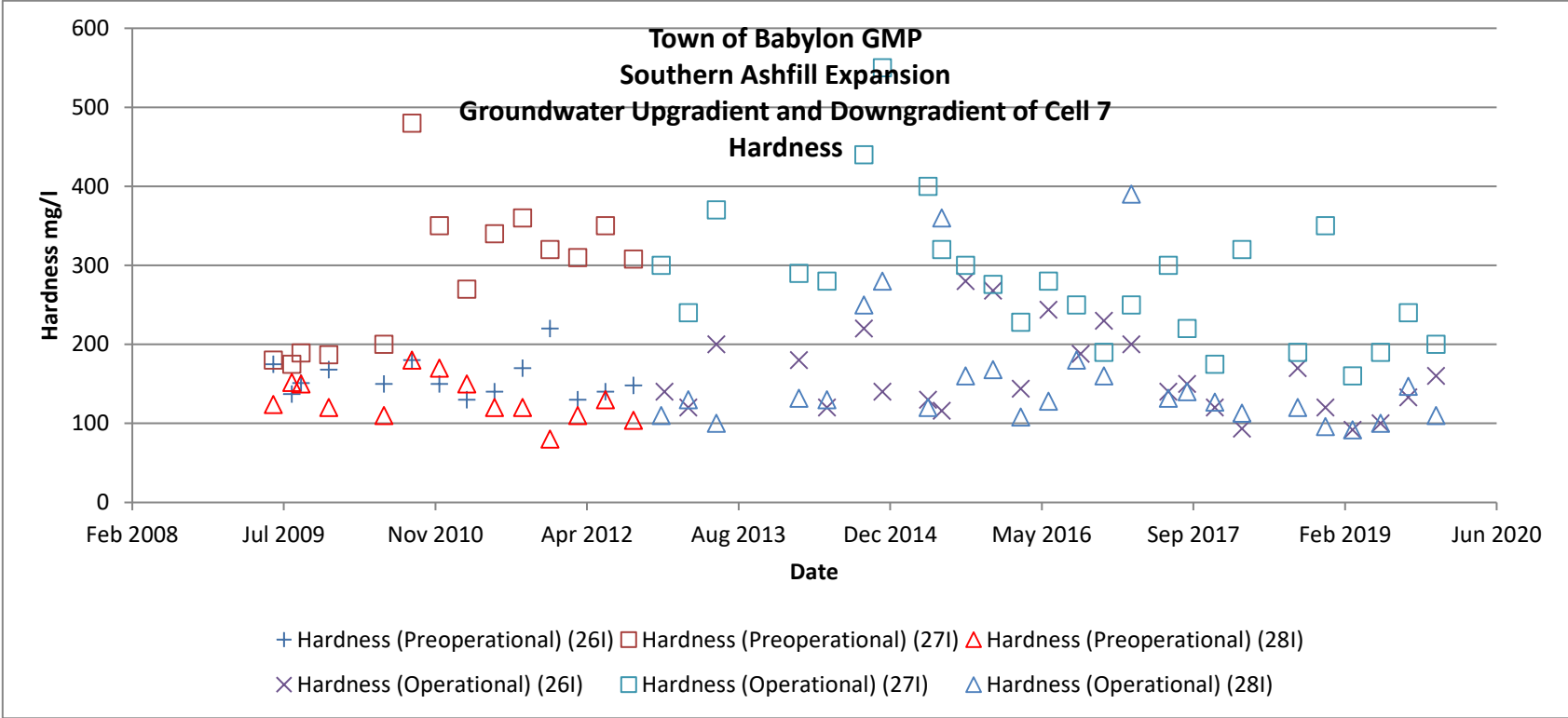
× Calcium (Preoperational)    ○ Calcium (Operational)    — Mean of Preoperational Data    - - - Mean + 3 Stand. Dev.    — STV

The following charts illustrate the historical value of leachate indicators observed up and downgradient of Cell 7.

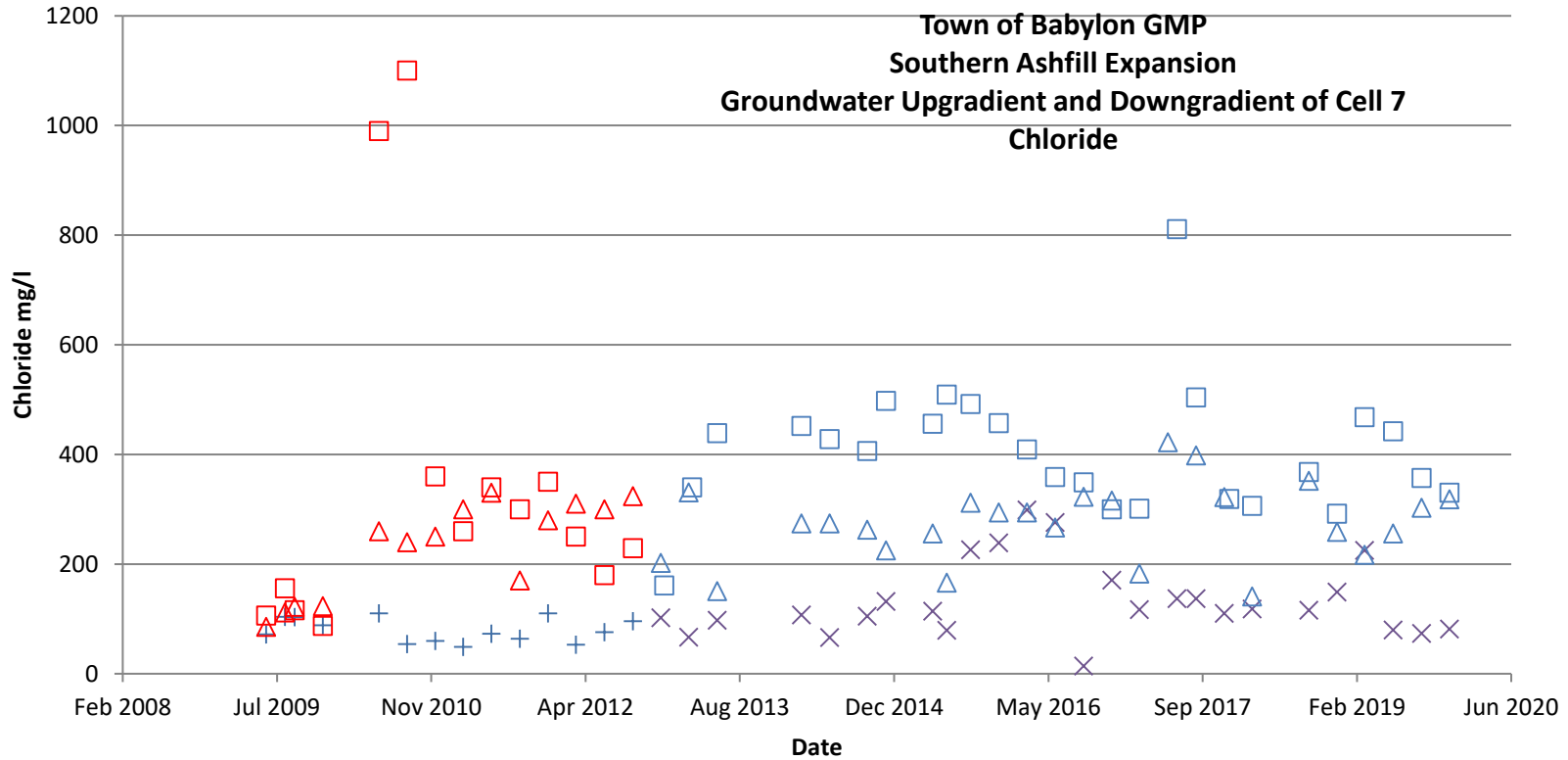
Town of Babylon GMP  
 Southern Ashfill Expansion  
 Groundwater Upgradient and Downgradient of Cell 7  
 Hardness



+ Hardness (Preoperational) Well 26    □ Hardness (Preoperational) well 27    △ Hardness (Preoperational) Well 28  
 × Hardness (Operational) (26)    □ Hardness (Operational) (27)    △ Hardness (Operational) (28)

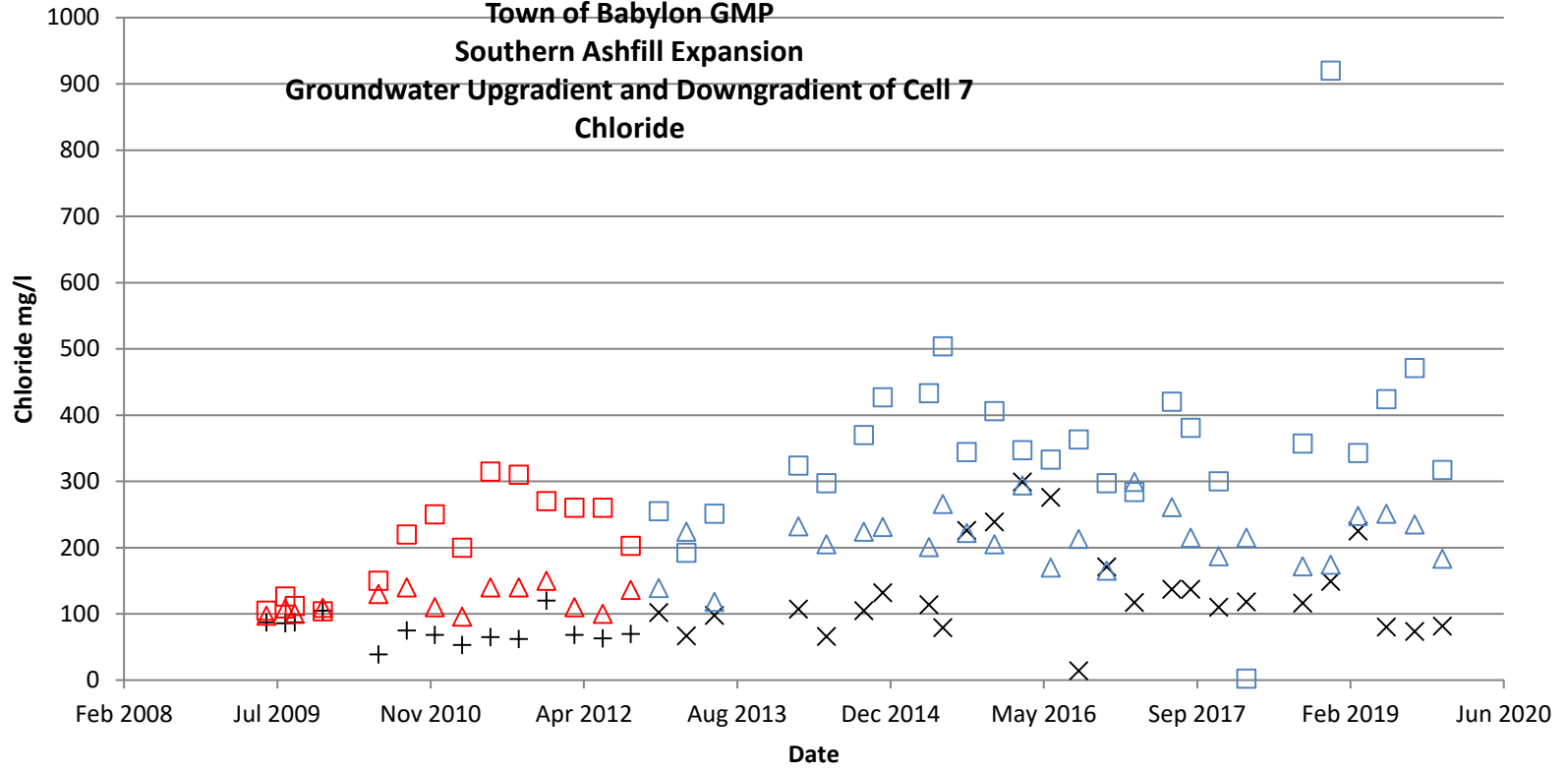


**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Chloride**



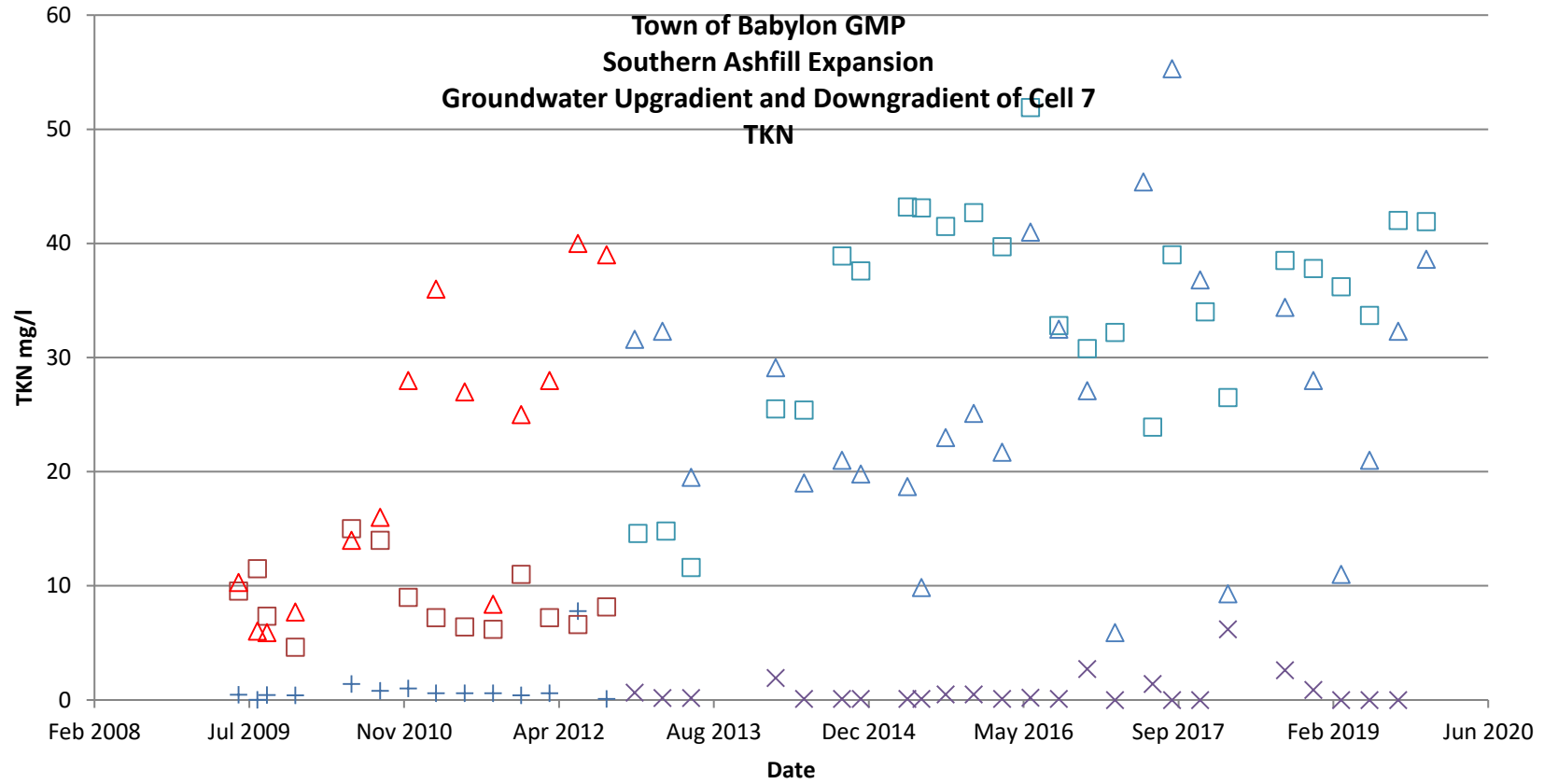
+ Chloride (Preoperational) Well 26 ppm   
 □ Chloride (Preoperational) Well 27 ppm   
 △ Chloride (Preoperational) Well 28 ppm  
 × Chloride (Operational) (26)   
 □ Chloride (Operational) (27)   
 △ Chloride (Operational) (28)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Chloride**



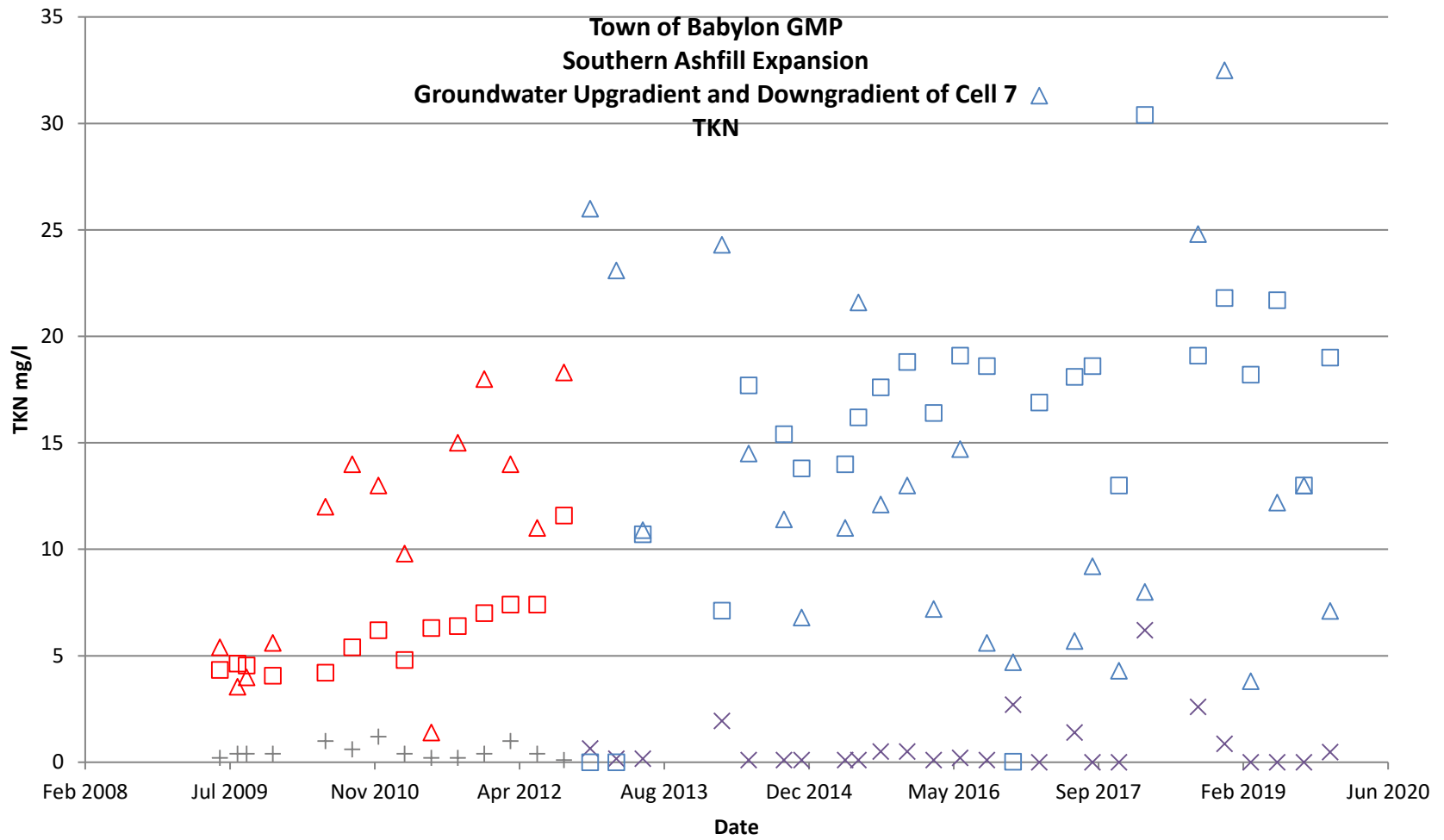
+ Chloride (Preoperational) (26I)   □ Chloride (Preoperational) (27I)   △ Chloride (Preoperational) (28I)  
 × Chloride (Operational) (26I)   □ Chloride (Operational) (27I)   △ Chloride (Operational) (28I)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
TKN**



+ TKN (Preoperational) Well 26    □ TKN (Preoperational) Well 27    △ TKN (Preoperational) Well 28  
 × TKN (Operational) (26)    □ TKN (Operational) (27)    △ TKN (Operational) (28)

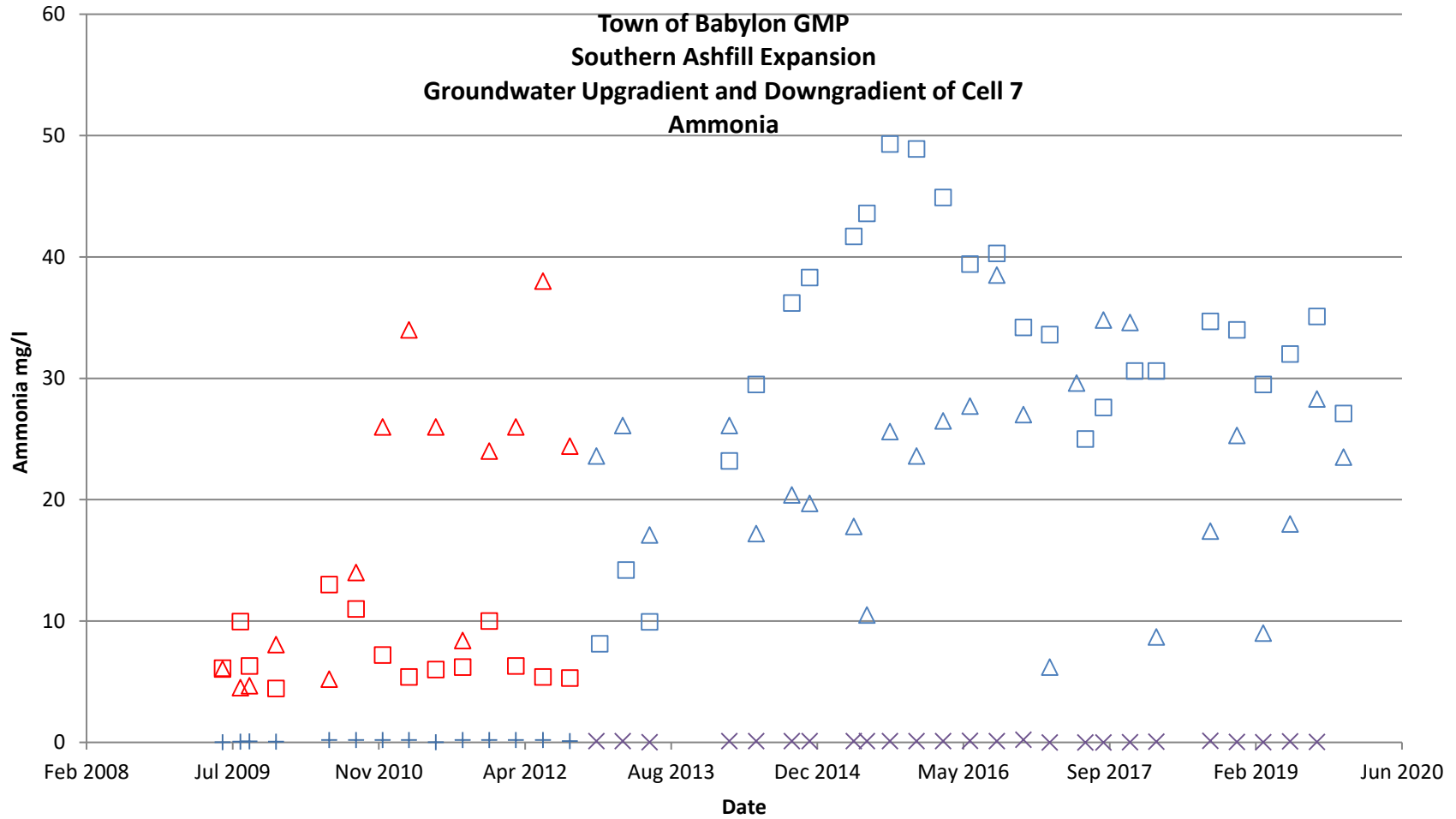
**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7**



+ TKN (Preoperational) (261)    □ TKN (Preoperational) (271)    △ TKN (Preoperational) (281)    × TKN (Operational) (271)    △ TKN (Operational)(281)

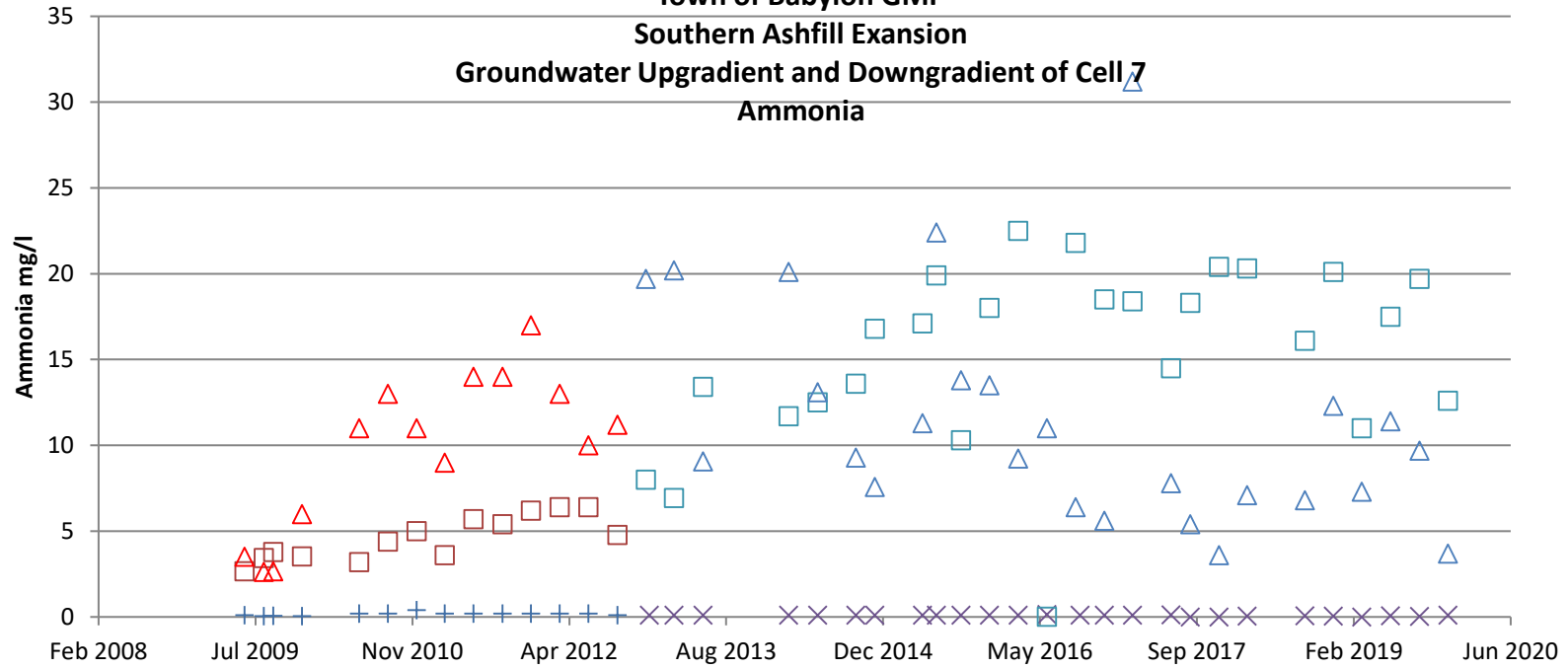


**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Ammonia**



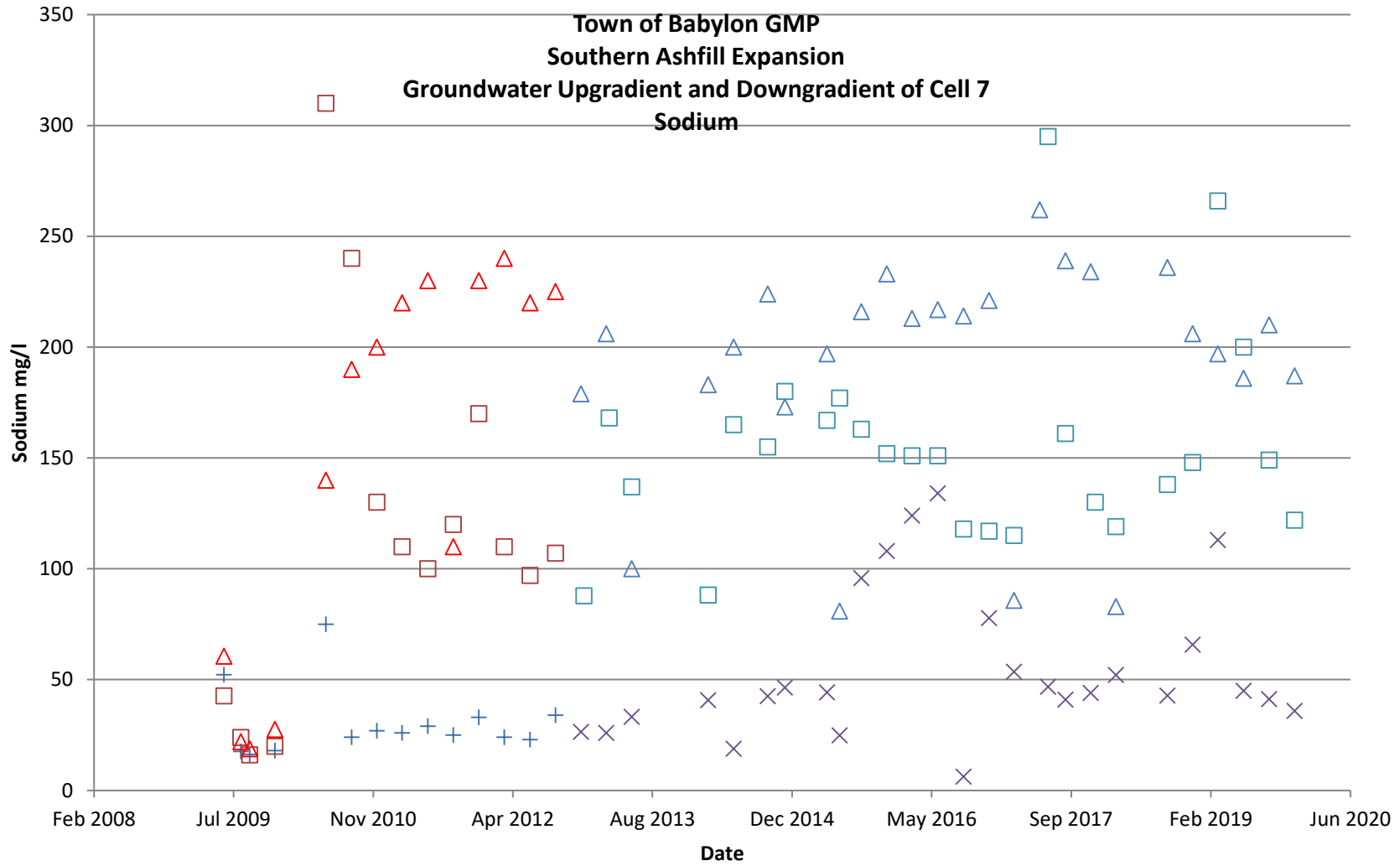
+ Ammonia as N (Preoperational) Well 26   
 □ Ammonia as N (Preoperational) Well 27   
 △ Ammonia as N (Preoperational) Well 28  
 × Ammonia as N (Operational) (26)   
 □ Ammonia as N (Operational) (27)   
 △ Ammonia as N (Operational) (28)

**Town of Babylon GMP  
Southern Ashfill Exansion  
Groundwater Upgradient and Downgradient of Cell 7  
Ammonia**



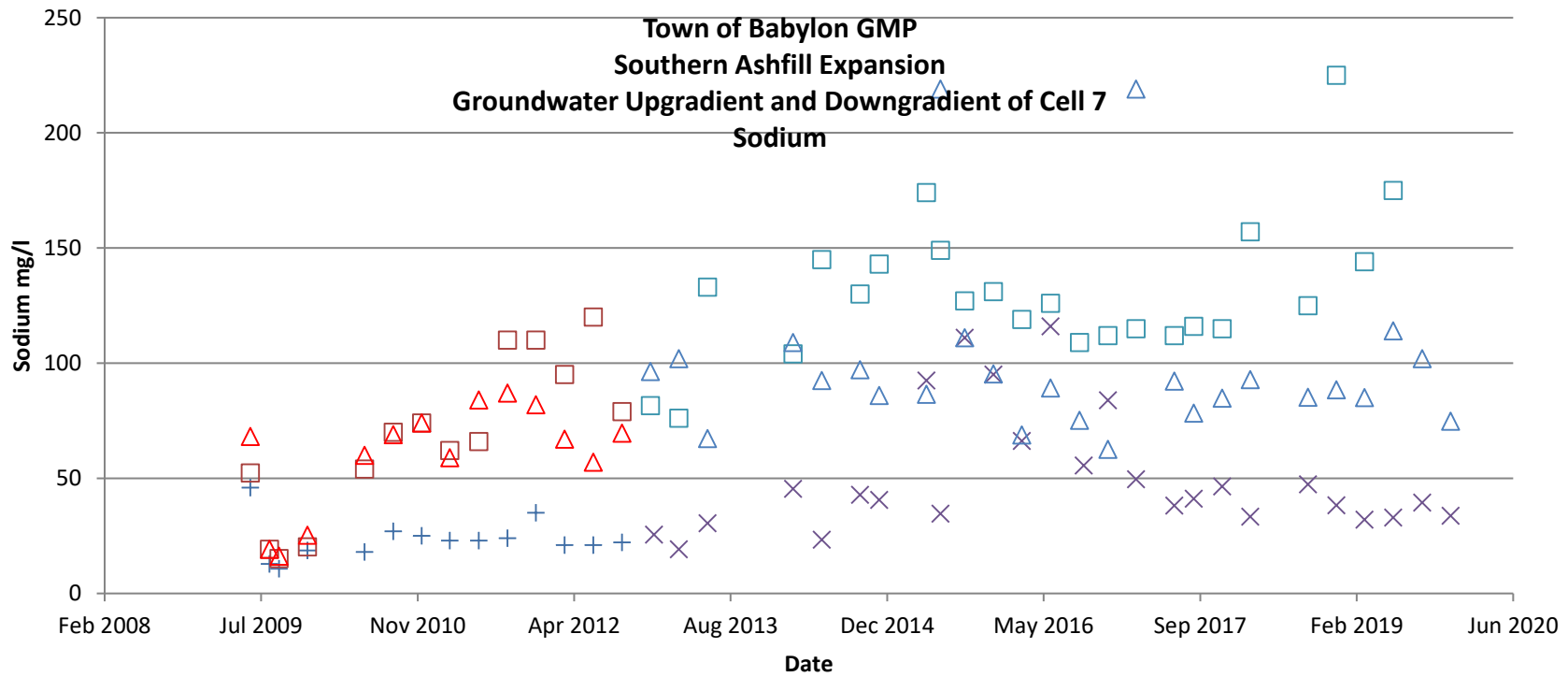
+ Ammonia as N (Preoperational) (26I)    □ Ammonia as N (Preoperational) (27I)    △ Ammonia as N (Preoperational) (28I)  
 × Ammonia as N (Operational) (26I)    □ Ammonia as N (Operational) (27I)    △ Ammonia as N (Operational) (28I)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Sodium**



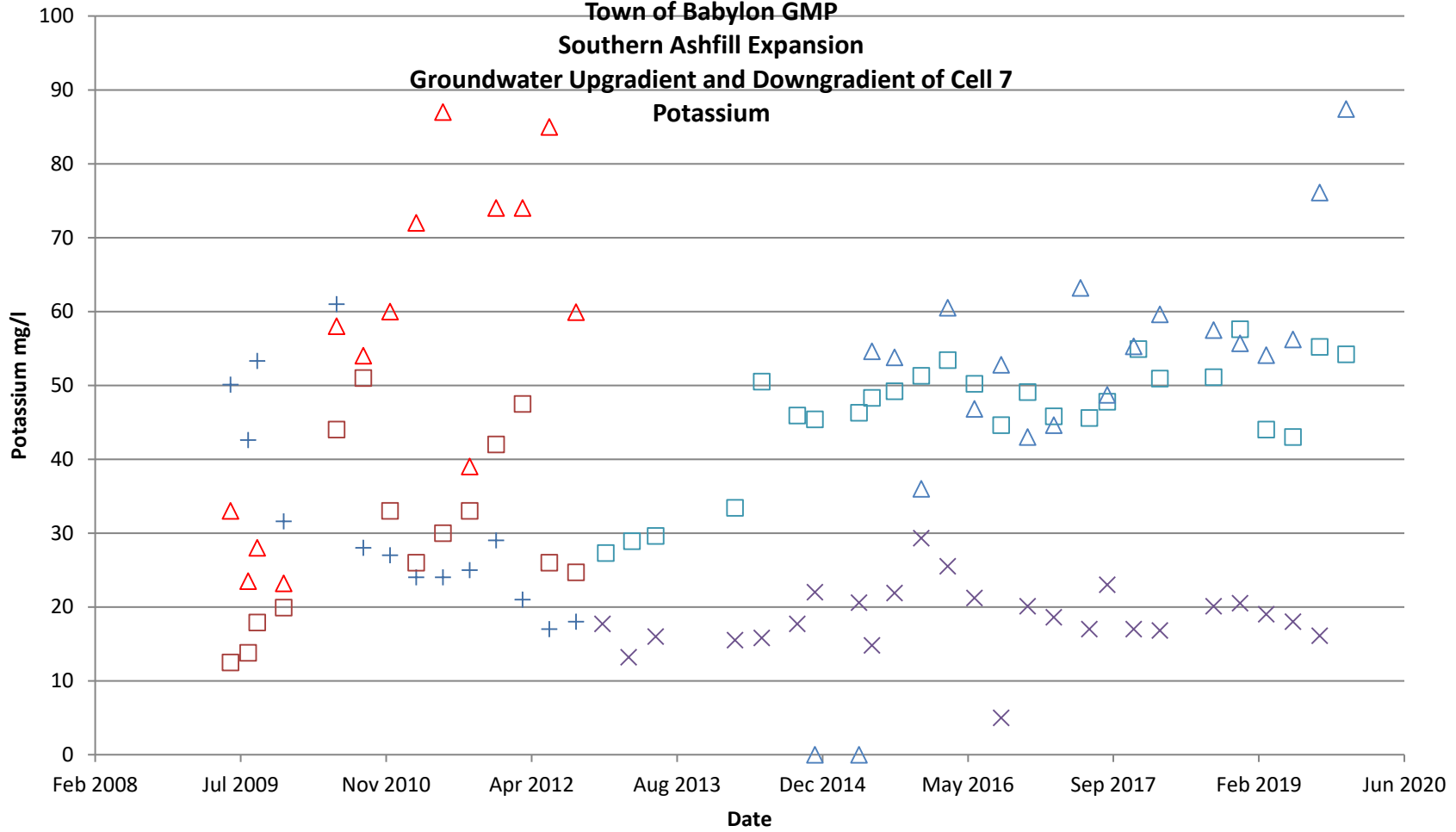
+ Sodium (Preoperational) Well 26    □ Sodium (Preoperational) Well 27    △ Sodium (Preoperational) Well 28  
 × Sodium (Operational) (26)    □ Sodium (Operational) (27)    △ Sodium (Operational)(28)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Sodium**



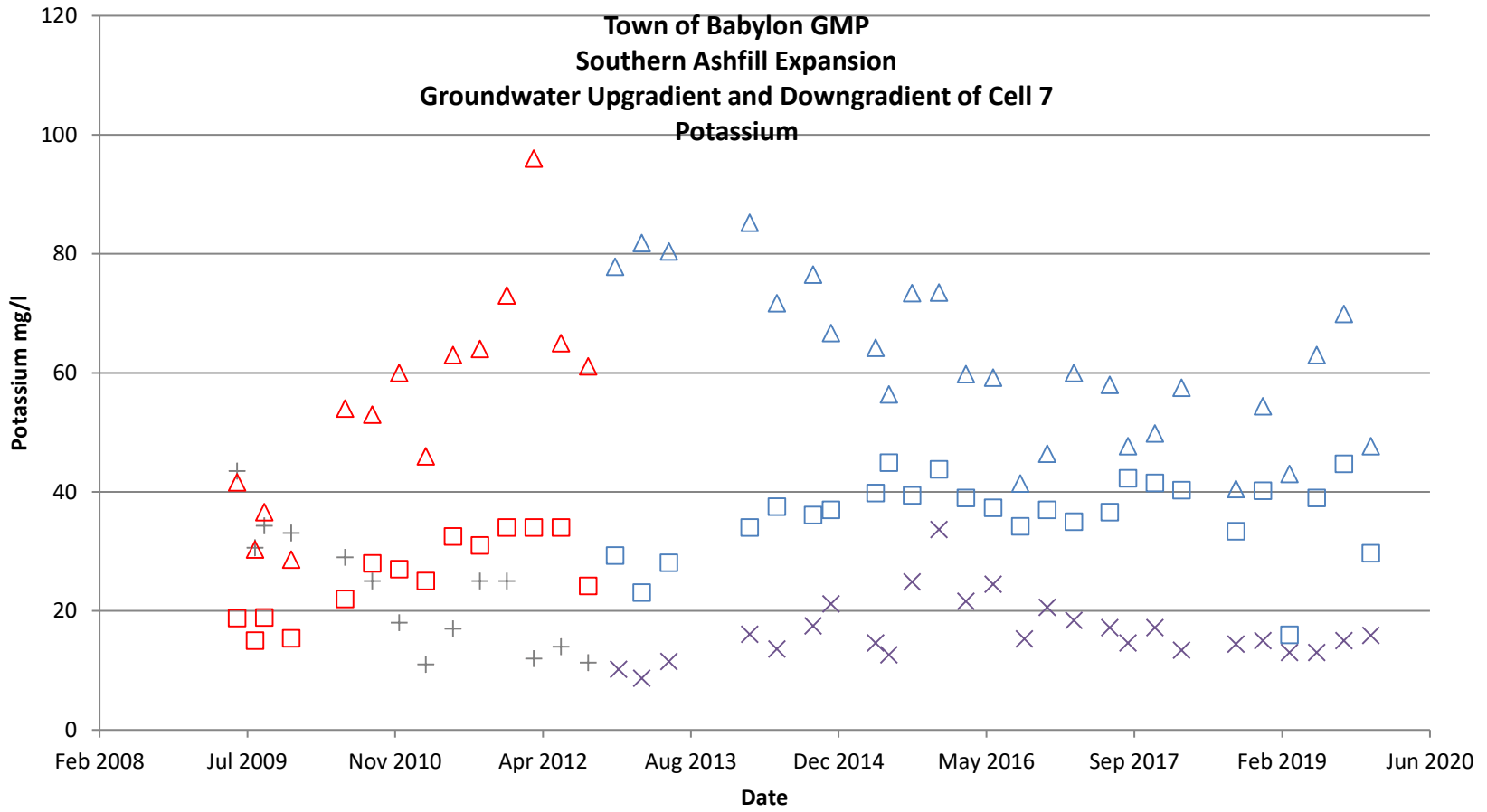
+ Sodium (Preoperational) (26I)    □ Sodium (Preoperational) (27I)    △ Sodium (Preoperational) (28I)  
 × Sodium (Operational) (26I)    □ Sodium (Operational) (27I)    △ Sodium (Operational) (28I)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Potassium**



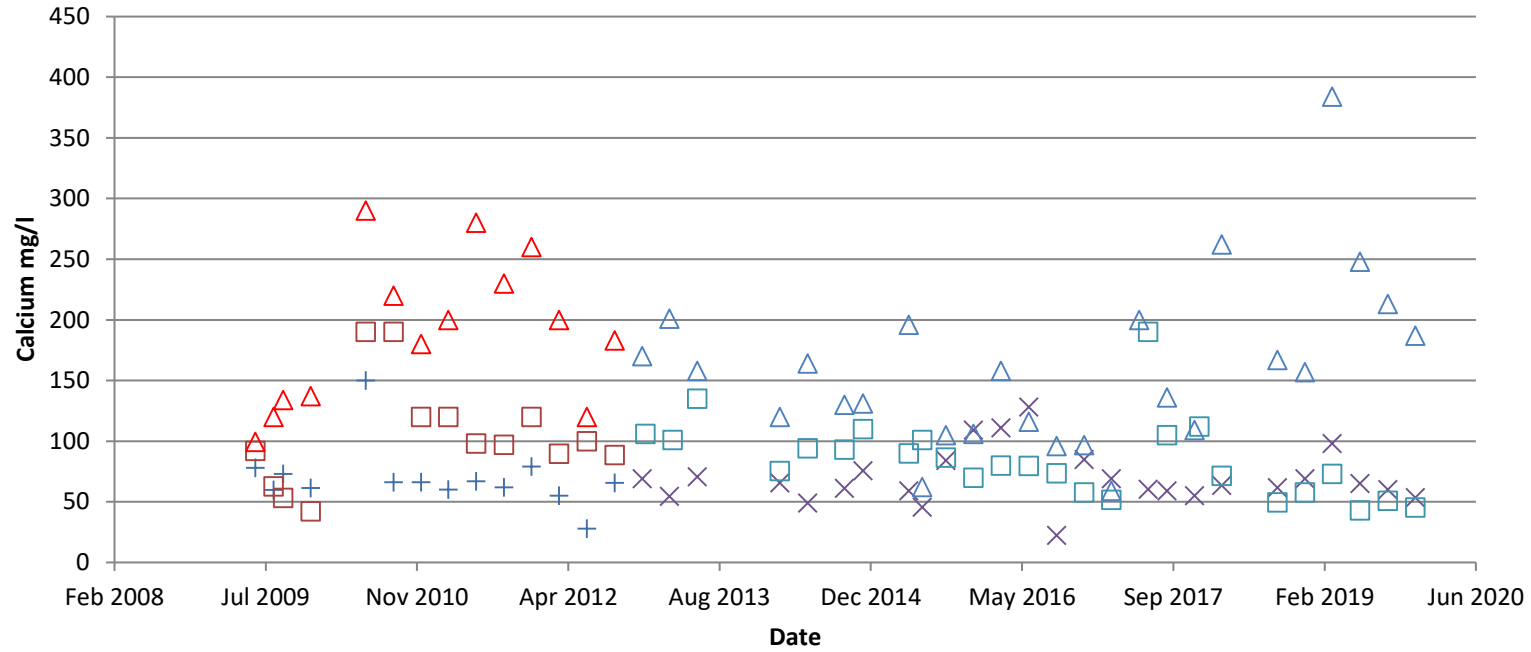
+ Potassium (Preoperational) Well 26    □ Potassium (Preoperational) Well 27    △ Potassium (Preoperational) Well 28  
 × Potassium (Operational) (26)    □ Potassium (Operational) (27)    △ Potassium (Operational) (28)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient and Downgradient of Cell 7  
Potassium**



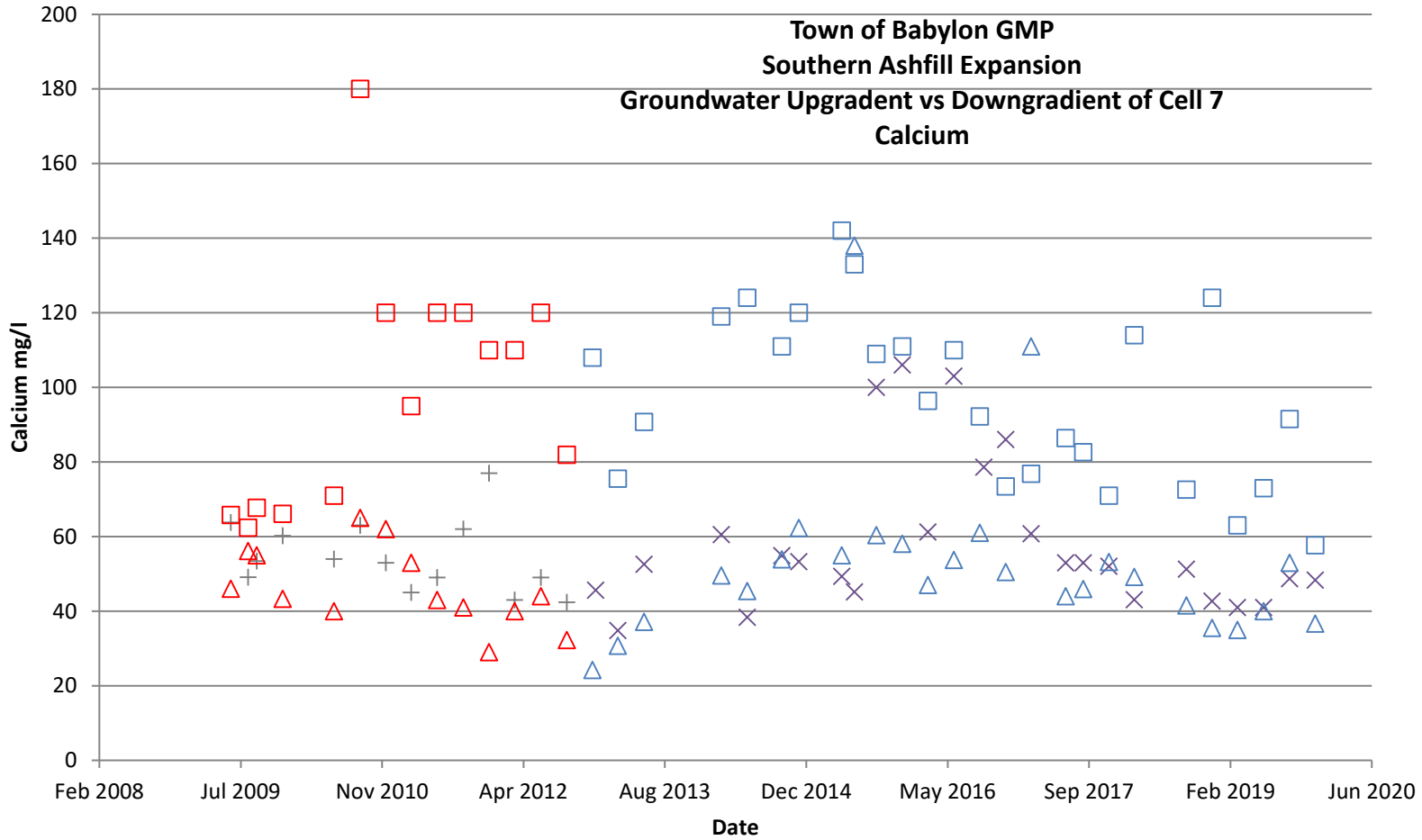
+ Potassium (Preoperational) (26I)    □ Potassium (Preoperational) (27I)    △ Potassium (Preoperational) (28I)  
× Potassium (Operational) (26I)    □ Potassium (Operational) (27I)    △ Potassium (Operational) (28I)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient vs Downgradient of Cell 7  
Calcium**



- + Calcium (Preoperational) Well 26
- Calcium (Preoperational) well 27
- △ Calcium (Preoperational) Well 28
- × Calcium (Operational) (26)
- Calcium (Operational) (27)
- △ Calcium (Operational) (28)

**Town of Babylon GMP  
Southern Ashfill Expansion  
Groundwater Upgradient vs Downgradient of Cell 7  
Calcium**



+ Calcium (Preoperational) (26I)   □ Calcium (Preoperational) (27I)   △ Calcium (Preoperational) (28I)  
 × Calcium (Operational) (26I)   □ Calcium (Operational) (27I)   △ Calcium (Operational) (28I)



Review of the overall dataset at this facility reveals variability in the STV's over a very small geographic area. It was also noted that the STV's at the upgradient monitoring points (established prior to operation of the Cell 7 Ash Facility) are generally less than at downgradient locations. Discrepancies associated with baseline data became more pronounced after construction of the ash facility (but before deposition of ash). The presence of leachate indicators prior to operation of the Cell 7 facility can be observed on the graphs provided in this report that compare upgradient and downgradient data. These graphs illustrate a notable spike in most indicators in June 2010 (approximately 1 year after construction of the cell 7 facility). Ash was not introduced to Cell 7 until November 2012.

The above observations and review of the graphs provided with these semiannual reports indicate the presence of a source of leachate indicators impacting these monitoring points (well clusters 26-28) prior to the introduction of ash at Cell 7. When one catalogs existing and historical land uses upgradient of the Cell 7 facility, numerous potential sources of indicators are present. These include but are not limited to a former landfill, scrap metal recycling yard, the former location of the "car hill" (Town of Babylon recycling operation), a prior temporary salt storage location for roadway de-icing, waste to energy plant, the old and new Northern U ashfills and miscellaneous industrial uses. Additionally, organic material/sediment at the bottom of Lake Wyandanch that was disturbed during construction of the Cell 7 ashfill remaining below the liner system can be associated with TKN/NH<sub>3</sub> observances downgradient of the facility<sup>4</sup>. Based upon the above analysis and observations, TOBDEC stated in the December 2014 GMP report that these pre existing sources are likely to result in intermittent "hits" of leachate indicators at the monitoring points established for the Cell 7 GMP, and that these sources should continue to impact the results at monitoring points up and downgradient of Cell 7 throughout the life of the facility.

It has also been observed that leachate from the Babylon ashfills is comprised of high values of all indicators selected in the draft GMP. Therefore, any breach of the liner system should result in the detection of all leachate indicators downgradient of the facility. TOBDEC then proposed that future breaches of the STV will only be considered problematic if most or all indicators are observed above their STV. The draft GMP prepared for Cell 7 did not account for these unforeseen interferences with the monitoring program and the addendum to the GMP reexamined the GMP program, the data accrued by the GMP and TOBDEC's STV proposal.

The addendum to the GMP (P.W. Grosser, 2015) concurred with the above analysis and expectations for future groundwater sampling at the Cell 7 facility and provided updated protocols for the GMP based upon the data accrued and conditions observed to date. In summary the 2015 addendum to the GMP found/recommended:

- The operational groundwater monitoring protocol presented in the original GMP remains a reliable means to detect a release of leachate at Cell 7.

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<sup>4</sup> Conversation with Mr. John Rhyner, P.W. Grosser Consulting. November 14, 2014.

- Groundwater downgradient of the Cell 7 facility has been highly variable due to Lake Wyandanch's pre-existing use for stormwater impoundment and other historical land uses upgradient of the Cell 7 facility. These factors will continue to influence the groundwater quality of the area.
- The pre-existing influences do not preclude the ability to identify a leachate release.
- STV's calculated for an individual well from its own data will vary with the variability present in groundwater quality between the wells.
- Continued breaching of individual STV's should be expected and only a downgradient well sample where all leachate indicators exceed their STV might indicate a leachate release.
- STV's should be reviewed in conjunction with Piper plots as criteria to trigger contingency actions.
- A single STV equal to the highest STV calculated at the downgradient wells be established for each indicator.
- Utilization of a Piper diagram demonstrates unique geochemical fingerprints for leachate, groundwater and stormwater.
- The final list of leachate indicators are chloride, hardness, calcium, potassium and sodium. TKN and ammonia are not considered reliable indicators since their concentrations are not significantly different from leachate and the presence of a prior source (Lake Wyandanch) which may be contributing to ongoing residual influence on operational data. Either TKN or ammonia should continue to be monitored for continuity. Manganese should be eliminated as an indicator due to its concentration in groundwater and leachate being similar and the presence of anomalous spikes.
- Groundwater sampling for Cell 7 may proceed if precipitation of no greater than 0.25 inch has been recorded within the preceding week.

Upon review of the September and December 2019 GMP data for the Cell 7 facility:

At the downgradient well clusters:

- At monitoring point GM-27:
  - No leachate indicator has exceeded their STV at GM-27 during the GMP.
  - TKN and ammonia are no longer included as leachate indicators, however each continue to be monitored for continuity. TKN and ammonia continue to exceed their mean plus 3(SD) value.
  - Hardness exceeded its mean plus 3(SD) for December 2014 and has not exceeded its mean plus 3(SD) value since. With this exception noted, indicators at GM-27 continue to be observed below their mean plus 3(SD) and STV levels.
  - Piper plot for 27 continues to remain within its historical configuration.
- At monitoring point 27I:
  - No leachate indicator has exceeded their STV at 27I during the GMP.
  - Chloride exceeded the mean plus 3(SD) value for the September 2019 sampling. Historically, chloride also exceeded the mean plus 3(SD) in March and June 2015 and December 2018.

- Sodium exceeded its mean plus 3(sd) for June and September 2019. Historically, sodium also exceeded its mean plus 3(SD) in December 2018 and March 2015 sampling.
- TKN and ammonia have exceeded their mean plus 3(SD) value since June 2013 (TKN did not exceed its m-3SD for March 2019) It is noted that these parameters are no longer classified as leachate indicators for the GMP and are monitored solely for continuity.
- Leachate indicators at GM-27I continue to be observed below their STV.
- Piper plot for 27I continues to remain within its historical configuration.
- At monitoring point 28:
  - Hardness and calcium at GM-28 exceeded their STV for March 2019. All leachate indicators were below their STV and mean plus 3(SD) for June, September and December 2019. No action or notification thresholds were triggered by the March 2019 result. Historically, hardness had exceeded its STV at GM-28 in June 2015.
  - No other indicators have been observed exceeding their STV or mean plus 3(SD) at this monitoring location.
  - The Piper diagram for GM-28 remains within the general area delineated for well 28. Elevated sulfate in March 2018 produced the only overt breach into the stormwater fingerprint included on the diagram.
- At monitoring point 28I:
  - No leachate indicator has exceeded their STV at 28I during the GMP.
  - Chloride was observed above its mean plus 3(SD) value for September and December 2019. Chloride has frequently been observed above its mean plus 3(SD) value.
  - No other indicator was observed above its mean plus 3(SD) for September and December 2019. Sodium and calcium were observed above their mean plus 3(SD) values for June 2015 and March 2017. Hardness was observed above its mean plus 3(SD) during September 2014, December 2014, June 2015 and March 2017 sampling.
  - TKN was below its mean plus 3(SD) value for September and December 2019 sampling. TKN exceeded its mean plus 3(SD) during April 2017 and December 2018. TKN is no longer classified as an indicator and is monitored solely for continuity.
  - The Piper diagram for 28I remains within its historical configuration.
- Review of the tables and graphs comparing upgradient and downgradient monitoring points:
  - As noted in previous reports an increase in leachate indicators is noted in preoperational data circa 2008/2009, coinciding with the filling in of Lake Wyandanch during construction of the Cell 7 ash facility.
  - Leachate indicators from up gradient monitoring points (well cluster 26/26I) include a number of values exceeding pre-operational data.
  - Leachate indicators from the downgradient monitoring points generally remain within preoperational thresholds. Chloride observed at GM 27I and GM-28I include slightly elevated values downgradient during the operational phase period. This is consistent with notations discussed in

this report indicating chloride at these monitoring points have been observed exceeding mean plus 3(SD). No values of chloride have been observed above their STV at these locations. Therefore the monitoring program does not exhibit evidence indicating a failure to the liner system.

The addendum to the Grosser GMP recommends the use of trilinear plot(s) in conjunction with comparison of leachate indicators to the established STV's to assess the possibility of a leachate release from the Cell 7 facility. The premise behind this requirement is that ashfill leachate and groundwater each possess separate and unique geochemical fingerprints. A Piper diagram could then assist in determining if leachate from Cell 7 has impacted groundwater downgradient of the facility. Figure 1 is a Piper Diagram presented in the Addendum to the GMP (P.W. Grosser, 2015) that provides the geochemical fingerprints of groundwater from each downgradient well cluster, leachate from the Town ashfills and stormwater. Figures 2-5 include the Piper diagrams of each Cell 7 monitoring point including groundwater data accrued in pre and post operational sampling and stormwater. As provided in the above bullets, the geochemical fingerprint of the two downgradient monitoring points remains intact with the most recent data from September and December 2019

To preclude the possibility of stormwater substantially impacting the concentration of leachate indicators in groundwater at the monitoring points, the Grosser monitoring plan includes a requirement that the Cell 7 groundwater wells not be sampled if precipitation exceeds .25 inch for 1 week prior to sampling.

Sampling at Cell 7 for September and December 2019 also included 1,4 dioxane and PFAS/PFOA's. Their results are attached to this section and appendix 1.

In summary, groundwater data accrued during operational phase sampling indicate the presence of random non Cell 7 sources of leachate indicators observed at values generally less than the established STV. Piper diagrams were updated for the monitoring points for the Cell 7 facility after the December 2019 sampling. Piper diagrams for the downgradient well clusters (GM 27/27I and GM-28/28I) did not indicate substantive changes to the geochemical fingerprint of groundwater downgradient of the facility. The Piper plot at GM 28 for March 2018 (figure 4, solid gold circle) displayed a shift that appeared to be the result of elevated values of sulfate and calcium. The Piper plots after March 2018 at GM 28 returned to their traditional fingerprint or pattern on the Piper diagram and it was noted that values for sulfate and calcium returned to their normal or historical range. Based upon the analysis of data accrued at Cell 7 discussed above it can reasonably be concluded that the liner system at Cell 7 is functioning as designed.

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
 SDG: 70104904

**Client Sample ID: GM-26**  
 Date Collected: 09/13/19 09:15  
 Date Received: 09/18/19 09:15

**Lab Sample ID: 320-54443-1**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	49		2.1	0.36	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluoropentanoic acid (PFPeA)	130		2.1	0.50	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorohexanoic acid (PFHxA)	80		2.1	0.60	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluoroheptanoic acid	50		2.1	0.26	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorooctanoic acid (PFOA)	27		2.1	0.87	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorononanoic acid (PFNA)	16		2.1	0.28	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorodecanoic acid (PFDA)	1.2	J	2.1	0.32	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluoroundecanoic acid (PFUnA)	3.4		2.1	1.1	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorododecanoic acid (PFDoA)	<2.1		2.1	0.56	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorotridecanoic acid (PFTriA)	<2.1		2.1	1.3	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorotetradecanoic acid (PFTeA)	0.40	J	2.1	0.30	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorobutanesulfonic acid (PFBS)	3.9		2.1	0.21	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorohexanesulfonic acid (PFHxS)	13	B	2.1	0.17	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.54	J	2.1	0.19	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorooctanesulfonic acid (PFOS)	40		2.1	0.55	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorodecanesulfonic acid (PFDS)	<2.1		2.1	0.33	ng/L		09/24/19 04:39	09/30/19 18:23	1
Perfluorooctanesulfonamide (FOSA)	0.57	J B	2.1	0.36	ng/L		09/24/19 04:39	09/30/19 18:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<21		21	3.2	ng/L		09/24/19 04:39	09/30/19 18:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<21		21	1.9	ng/L		09/24/19 04:39	09/30/19 18:23	1
6:2 FTS	5.0	J	21	2.1	ng/L		09/24/19 04:39	09/30/19 18:23	1
8:2 FTS	<21		21	2.1	ng/L		09/24/19 04:39	09/30/19 18:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	41		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C5 PFPeA	70		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C2 PFHxA	71		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C4 PFHpA	81		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C4 PFOA	88		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C5 PFNA	86		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C2 PFDA	85		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C2 PFUnA	75		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C2 PFDoA	75		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C2 PFTeDA	60		25 - 150	09/24/19 04:39	09/30/19 18:23	1
18O2 PFHxS	87		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C4 PFOS	80		25 - 150	09/24/19 04:39	09/30/19 18:23	1
13C8 FOSA	72		25 - 150	09/24/19 04:39	09/30/19 18:23	1
d3-NMeFOSAA	72		25 - 150	09/24/19 04:39	09/30/19 18:23	1
d5-NEtFOSAA	67		25 - 150	09/24/19 04:39	09/30/19 18:23	1
M2-6:2 FTS	150		25 - 150	09/24/19 04:39	09/30/19 18:23	1
M2-8:2 FTS	106		25 - 150	09/24/19 04:39	09/30/19 18:23	1



# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
 SDG: 70104904

**Client Sample ID: GM-26I**

**Lab Sample ID: 320-54443-2**

Date Collected: 09/13/19 09:25

Matrix: Water

Date Received: 09/18/19 09:15

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	47		2.1	0.37	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluoropentanoic acid (PFPeA)	120		2.1	0.52	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorohexanoic acid (PFHxA)	77		2.1	0.61	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluoroheptanoic acid	59		2.1	0.26	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorooctanoic acid (PFOA)	30		2.1	0.90	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorononanoic acid (PFNA)	11		2.1	0.29	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorodecanoic acid (PFDA)	1.5	J	2.1	0.33	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluoroundecanoic acid (PFUnA)	2.1	I	2.1	1.2	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorododecanoic acid (PFDoA)	<2.1		2.1	0.58	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorotridecanoic acid (PFTriA)	<2.1		2.1	1.4	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorotetradecanoic acid (PFTeA)	<2.1		2.1	0.31	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorobutanesulfonic acid (PFBS)	3.1		2.1	0.21	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorohexanesulfonic acid (PFHxS)	13	B	2.1	0.18	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.69	J	2.1	0.20	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorooctanesulfonic acid (PFOS)	33		2.1	0.57	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorodecanesulfonic acid (PFDS)	<2.1		2.1	0.34	ng/L		09/24/19 04:39	09/29/19 16:03	1
Perfluorooctanesulfonamide (FOSA)	0.45	J B	2.1	0.37	ng/L		09/24/19 04:39	09/29/19 16:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<21		21	3.3	ng/L		09/24/19 04:39	09/29/19 16:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEiFOSAA)	<21		21	2.0	ng/L		09/24/19 04:39	09/29/19 16:03	1
6:2 FTS	6.5	J	21	2.1	ng/L		09/24/19 04:39	09/29/19 16:03	1
8:2 FTS	<21		21	2.1	ng/L		09/24/19 04:39	09/29/19 16:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	43		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C5 PFPeA	70		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C2 PFHxA	70		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C4 PFHpA	78		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C4 PFOA	86		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C5 PFNA	82		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C2 PFDA	79		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C2 PFUnA	70		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C2 PFDoA	67		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C2 PFTeDA	56		25 - 150				09/24/19 04:39	09/29/19 16:03	1
18O2 PFHxS	89		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C4 PFOS	83		25 - 150				09/24/19 04:39	09/29/19 16:03	1
13C8 FOSA	67		25 - 150				09/24/19 04:39	09/29/19 16:03	1
d3-NMeFOSAA	67		25 - 150				09/24/19 04:39	09/29/19 16:03	1
d5-NEiFOSAA	65		25 - 150				09/24/19 04:39	09/29/19 16:03	1
M2-6:2 FTS	143		25 - 150				09/24/19 04:39	09/29/19 16:03	1
M2-8:2 FTS	107		25 - 150				09/24/19 04:39	09/29/19 16:03	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
 SDG: 70104904

**Client Sample ID: GM-27**

**Lab Sample ID: 320-54443-3**

Date Collected: 09/13/19 10:33

Matrix: Water

Date Received: 09/18/19 09:15

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	130		2.2	0.38	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluoropentanoic acid (PFPeA)	150		2.2	0.53	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorohexanoic acid (PFHxA)	150		2.2	0.63	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluoroheptanoic acid	110		2.2	0.27	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorooctanoic acid (PFOA)	180		2.2	0.92	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorononanoic acid (PFNA)	99		2.2	0.29	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorodecanoic acid (PFDA)	38		2.2	0.34	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluoroundecanoic acid (PFUnA)	4.4		2.2	1.2	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorododecanoic acid (PFDoA)	<2.2		2.2	0.60	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorotridecanoic acid (PFTriA)	<2.2		2.2	1.4	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorotetradecanoic acid (PFTeA)	<2.2		2.2	0.31	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorobutanesulfonic acid (PFBS)	5.6		2.2	0.22	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorohexanesulfonic acid (PFHxS)	38	B	2.2	0.18	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.6	J	2.2	0.21	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorooctanesulfonic acid (PFOS)	150		2.2	0.59	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorodecanesulfonic acid (PFDS)	<2.2		2.2	0.35	ng/L		09/24/19 04:39	09/30/19 18:31	1
Perfluorooctanesulfonamide (FOSA)	7.4	B	2.2	0.38	ng/L		09/24/19 04:39	09/30/19 18:31	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	9.2	J	22	3.4	ng/L		09/24/19 04:39	09/30/19 18:31	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	20	J	22	2.1	ng/L		09/24/19 04:39	09/30/19 18:31	1
6:2 FTS	55		22	2.2	ng/L		09/24/19 04:39	09/30/19 18:31	1
8:2 FTS	4.2	J	22	2.2	ng/L		09/24/19 04:39	09/30/19 18:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	27		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C5 PFPeA	69		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C2 PFHxA	87		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C4 PFHpA	89		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C4 PFOA	104		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C5 PFNA	117		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C2 PFDA	140		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C2 PFUnA	157	*	25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C2 PFDoA	143		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C2 PFTeDA	92		25 - 150				09/24/19 04:39	09/30/19 18:31	1
18O2 PFHxS	143		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C4 PFOS	142		25 - 150				09/24/19 04:39	09/30/19 18:31	1
13C8 FOSA	100		25 - 150				09/24/19 04:39	09/30/19 18:31	1
d3-NMeFOSAA	114		25 - 150				09/24/19 04:39	09/30/19 18:31	1
d5-NEtFOSAA	132		25 - 150				09/24/19 04:39	09/30/19 18:31	1
M2-6:2 FTS	302	*	25 - 150				09/24/19 04:39	09/30/19 18:31	1
M2-8:2 FTS	536	*	25 - 150				09/24/19 04:39	09/30/19 18:31	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
 SDG: 70104904

**Client Sample ID: GM-271**  
 Date Collected: 09/13/19 10:43  
 Date Received: 09/18/19 09:15

**Lab Sample ID: 320-54443-4**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	92		2.3	0.40	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluoropentanoic acid (PFPeA)	110		2.3	0.55	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorohexanoic acid (PFHxA)	110		2.3	0.66	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluoroheptanoic acid	82		2.3	0.28	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorooctanoic acid (PFOA)	120		2.3	0.96	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorononanoic acid (PFNA)	63		2.3	0.31	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorodecanoic acid (PFDA)	29		2.3	0.35	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluoroundecanoic acid (PFUnA)	7.1		2.3	1.2	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorododecanoic acid (PFDoA)	<2.3		2.3	0.62	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorotridecanoic acid (PFTriA)	<2.3		2.3	1.5	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorotetradecanoic acid (PFTeA)	<2.3		2.3	0.33	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorobutanesulfonic acid (PFBS)	7.0		2.3	0.23	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorohexanesulfonic acid (PFHxS)	29	B	2.3	0.19	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.4	J	2.3	0.21	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorooctanesulfonic acid (PFOS)	110		2.3	0.61	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorodecanesulfonic acid (PFDS)	<2.3		2.3	0.36	ng/L		09/24/19 04:39	09/29/19 16:19	1
Perfluorooctanesulfonamide (FOSA)	5.3	B	2.3	0.40	ng/L		09/24/19 04:39	09/29/19 16:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.8	J	23	3.5	ng/L		09/24/19 04:39	09/29/19 16:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	17	J	23	2.1	ng/L		09/24/19 04:39	09/29/19 16:19	1
6:2 FTS	69		23	2.3	ng/L		09/24/19 04:39	09/29/19 16:19	1
8:2 FTS	3.6	J	23	2.3	ng/L		09/24/19 04:39	09/29/19 16:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	26		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C5 PFPeA	68		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C2 PFHxA	87		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C4 PFHpA	87		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C4 PFOA	104		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C5 PFNA	111		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C2 PFDA	126		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C2 PFUnA	147		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C2 PFDoA	138		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C2 PFTeDA	116		25 - 150				09/24/19 04:39	09/29/19 16:19	1
18O2 PFHxS	133		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C4 PFOS	138		25 - 150				09/24/19 04:39	09/29/19 16:19	1
13C8 FOSA	99		25 - 150				09/24/19 04:39	09/29/19 16:19	1
d3-NMeFOSAA	106		25 - 150				09/24/19 04:39	09/29/19 16:19	1
d5-NEtFOSAA	126		25 - 150				09/24/19 04:39	09/29/19 16:19	1
M2-6:2 FTS	297	*	25 - 150				09/24/19 04:39	09/29/19 16:19	1
M2-8:2 FTS	481	*	25 - 150				09/24/19 04:39	09/29/19 16:19	1



# Client Sample Results

Client: Pace Analytical Services, LLC  
Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
SDG: 70104904

**Client Sample ID: GM-28**

**Lab Sample ID: 320-54443-5**

Date Collected: 09/13/19 12:00

Matrix: Water

Date Received: 09/18/19 09:15

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	110		2.1	0.37	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluoropentanoic acid (PFPeA)	170		2.1	0.52	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorohexanoic acid (PFHxA)	170		2.1	0.61	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluoroheptanoic acid	150		2.1	0.26	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorooctanoic acid (PFOA)	320		2.1	0.90	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorononanoic acid (PFNA)	70		2.1	0.29	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorodecanoic acid (PFDA)	24		2.1	0.33	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluoroundecanoic acid (PFUnA)	9.1		2.1	1.2	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorododecanoic acid (PFDoA)	<2.1		2.1	0.58	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorotridecanoic acid (PFTriA)	<2.1		2.1	1.4	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorotetradecanoic acid (PFTeA)	<2.1		2.1	0.31	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorobutanesulfonic acid (PFBS)	14		2.1	0.21	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorohexanesulfonic acid (PFHxS)	110	B	2.1	0.18	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	5.4		2.1	0.20	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorooctanesulfonic acid (PFOS)	220		2.1	0.57	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorodecanesulfonic acid (PFDS)	<2.1		2.1	0.34	ng/L		09/24/19 04:39	09/29/19 16:27	1
Perfluorooctanesulfonamide (FOSA)	5.1	B	2.1	0.37	ng/L		09/24/19 04:39	09/29/19 16:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<21		21	3.3	ng/L		09/24/19 04:39	09/29/19 16:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	7.6	J	21	2.0	ng/L		09/24/19 04:39	09/29/19 16:27	1
6:2 FTS	18	J F1	21	2.1	ng/L		09/24/19 04:39	09/29/19 16:27	1
8:2 FTS	6.3	J	21	2.1	ng/L		09/24/19 04:39	09/29/19 16:27	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C4 PFBA	20	*	25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C5 PFPeA	55		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C2 PFHxA	77		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C4 PFHpA	78		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C4 PFOA	97		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C5 PFNA	109		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C2 PFDA	131		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C2 PFUnA	144		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C2 PFDoA	139		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C2 PFTeDA	114		25 - 150				09/24/19 04:39	09/29/19 16:27	1
18O2 PFHxS	128		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C4 PFOS	139		25 - 150				09/24/19 04:39	09/29/19 16:27	1
13C8 FOSA	100		25 - 150				09/24/19 04:39	09/29/19 16:27	1
d3-NMeFOSAA	114		25 - 150				09/24/19 04:39	09/29/19 16:27	1
d5-NEtFOSAA	132		25 - 150				09/24/19 04:39	09/29/19 16:27	1
M2-6:2 FTS	327	*	25 - 150				09/24/19 04:39	09/29/19 16:27	1
M2-8:2 FTS	467	*	25 - 150				09/24/19 04:39	09/29/19 16:27	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
 SDG: 70104904

**Client Sample ID: GM-28I**  
 Date Collected: 09/13/19 12:30  
 Date Received: 09/18/19 09:15

**Lab Sample ID: 320-54443-6**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	31		2.1	0.37	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluoropentanoic acid (PFPeA)	58		2.1	0.52	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorohexanoic acid (PFHxA)	52		2.1	0.61	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluoroheptanoic acid	39		2.1	0.26	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorooctanoic acid (PFOA)	77		2.1	0.89	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorononanoic acid (PFNA)	23		2.1	0.28	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorodecanoic acid (PFDA)	11		2.1	0.33	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluoroundecanoic acid (PFUnA)	7.6		2.1	1.2	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorododecanoic acid (PFDoA)	0.82	J	2.1	0.58	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorotridecanoic acid (PFTriA)	<2.1		2.1	1.4	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorotetradecanoic acid (PFTeA)	<2.1		2.1	0.30	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorobutanesulfonic acid (PFBS)	6.4		2.1	0.21	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorohexanesulfonic acid (PFHxS)	26	B	2.1	0.18	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.2	J	2.1	0.20	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorooctanesulfonic acid (PFOS)	85		2.1	0.57	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorodecanesulfonic acid (PFDS)	<2.1		2.1	0.34	ng/L		09/24/19 04:39	09/29/19 16:51	1
Perfluorooctanesulfonamide (FOSA)	3.5	B	2.1	0.37	ng/L		09/24/19 04:39	09/29/19 16:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<21		21	3.3	ng/L		09/24/19 04:39	09/29/19 16:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	11	J	21	2.0	ng/L		09/24/19 04:39	09/29/19 16:51	1
6:2 FTS	30		21	2.1	ng/L		09/24/19 04:39	09/29/19 16:51	1
8:2 FTS	<21		21	2.1	ng/L		09/24/19 04:39	09/29/19 16:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	34		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C5 PFPeA	68		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C2 PFHxA	74		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C4 PFHpA	79		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C4 PFOA	88		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C5 PFNA	94		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C2 PFDA	105		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C2 PFUnA	106		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C2 PFDoA	94		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C2 PFTeDA	70		25 - 150				09/24/19 04:39	09/29/19 16:51	1
18O2 PFHxS	102		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C4 PFOS	105		25 - 150				09/24/19 04:39	09/29/19 16:51	1
13C8 FOSA	89		25 - 150				09/24/19 04:39	09/29/19 16:51	1
d3-NMeFOSAA	88		25 - 150				09/24/19 04:39	09/29/19 16:51	1
d5-NEtFOSAA	101		25 - 150				09/24/19 04:39	09/29/19 16:51	1
M2-6:2 FTS	230	*	25 - 150				09/24/19 04:39	09/29/19 16:51	1
M2-8:2 FTS	334	*	25 - 150				09/24/19 04:39	09/29/19 16:51	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-54443-1  
 SDG: 70104904

**Client Sample ID: GM-X**

**Lab Sample ID: 320-54443-7**

Date Collected: 09/13/19 10:43

Matrix: Water

Date Received: 09/18/19 09:15

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	82		2.1	0.37	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluoropentanoic acid (PFPeA)	110		2.1	0.51	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorohexanoic acid (PFHxA)	110		2.1	0.61	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluoroheptanoic acid	77		2.1	0.26	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorooctanoic acid (PFOA)	120		2.1	0.89	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorononanoic acid (PFNA)	64		2.1	0.28	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorodecanoic acid (PFDA)	28		2.1	0.33	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluoroundecanoic acid (PFUnA)	5.5		2.1	1.2	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorododecanoic acid (PFDoA)	<2.1		2.1	0.58	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorotridecanoic acid (PFTriA)	<2.1		2.1	1.4	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorotetradecanoic acid (PFTeA)	<2.1		2.1	0.30	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorobutanesulfonic acid (PFBS)	6.2		2.1	0.21	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorohexanesulfonic acid (PFHxS)	31	B	2.1	0.18	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.6	J	2.1	0.20	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorooctanesulfonic acid (PFOS)	100		2.1	0.57	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorodecanesulfonic acid (PFDS)	<2.1		2.1	0.34	ng/L		09/24/19 04:39	09/29/19 17:16	1
Perfluorooctanesulfonamide (FOSA)	5.0	B	2.1	0.37	ng/L		09/24/19 04:39	09/29/19 17:16	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	5.7	J	21	3.3	ng/L		09/24/19 04:39	09/29/19 17:16	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	17	J	21	2.0	ng/L		09/24/19 04:39	09/29/19 17:16	1
6:2 FTS	66		21	2.1	ng/L		09/24/19 04:39	09/29/19 17:16	1
8:2 FTS	3.3	J	21	2.1	ng/L		09/24/19 04:39	09/29/19 17:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	25		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C5 PFPeA	63		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C2 PFHxA	78		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C4 PFHpA	79		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C4 PFOA	94		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C5 PFNA	102		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C2 PFDA	115		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C2 PFUnA	133		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C2 PFDoA	122		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C2 PFTeDA	90		25 - 150				09/24/19 04:39	09/29/19 17:16	1
18O2 PFHxS	117		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C4 PFOS	117		25 - 150				09/24/19 04:39	09/29/19 17:16	1
13C8 FOSA	90		25 - 150				09/24/19 04:39	09/29/19 17:16	1
d3-NMeFOSAA	100		25 - 150				09/24/19 04:39	09/29/19 17:16	1
d5-NEtFOSAA	111		25 - 150				09/24/19 04:39	09/29/19 17:16	1
M2-6:2 FTS	274	*	25 - 150				09/24/19 04:39	09/29/19 17:16	1
M2-8:2 FTS	432	*	25 - 150				09/24/19 04:39	09/29/19 17:16	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: GM-26**  
 Date Collected: 12/26/19 14:30  
 Date Received: 12/31/19 08:45

**Lab Sample ID: 320-57401-1**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	45	B	1.8	0.32	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluoropentanoic acid (PFPeA)	110		1.8	0.45	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorohexanoic acid (PFHxA)	75		1.8	0.53	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluoroheptanoic acid	49		1.8	0.23	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorooctanoic acid (PFOA)	30		1.8	0.78	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorononanoic acid (PFNA)	17		1.8	0.25	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorodecanoic acid (PFDA)	1.4	J	1.8	0.28	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluoroundecanoic acid (PFUnA)	2.5		1.8	1.0	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorobutanesulfonic acid (PFBS)	3.5		1.8	0.18	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorohexanesulfonic acid (PFHxS)	14	B	1.8	0.16	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluoroheptanesulfonic acid (PFHpS)	0.50	J	1.8	0.17	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorooctanesulfonic acid (PFOS)	40		1.8	0.49	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		01/07/20 06:00	01/07/20 22:53	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		01/07/20 06:00	01/07/20 22:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		01/07/20 06:00	01/07/20 22:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		01/07/20 06:00	01/07/20 22:53	1
6:2 FTS	2.4	J	18	1.8	ng/L		01/07/20 06:00	01/07/20 22:53	1
8:2 FTS	ND		18	1.8	ng/L		01/07/20 06:00	01/07/20 22:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	49		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C5 PFPeA	70		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C2 PFHxA	76		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C4 PFHpA	83		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C4 PFOA	82		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C5 PFNA	84		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C2 PFDA	80		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C2 PFUnA	77		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C2 PFDoA	69		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C2 PFTeDA	76		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C3 PFBS	94		25 - 150	01/07/20 06:00	01/07/20 22:53	1
18O2 PFHxS	88		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C4 PFOS	94		25 - 150	01/07/20 06:00	01/07/20 22:53	1
13C8 FOSA	79		25 - 150	01/07/20 06:00	01/07/20 22:53	1
d3-NMeFOSAA	65		25 - 150	01/07/20 06:00	01/07/20 22:53	1
d5-NEtFOSAA	62		25 - 150	01/07/20 06:00	01/07/20 22:53	1
M2-6:2 FTS	137		25 - 150	01/07/20 06:00	01/07/20 22:53	1
M2-8:2 FTS	85		25 - 150	01/07/20 06:00	01/07/20 22:53	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: GM-26I**

**Lab Sample ID: 320-57401-2**

Date Collected: 12/26/19 14:23

Matrix: Water

Date Received: 12/31/19 08:45

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	45	B	1.9	0.34	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluoropentanoic acid (PFPeA)	120		1.9	0.48	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorohexanoic acid (PFHxA)	76		1.9	0.56	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluoroheptanoic acid	51		1.9	0.24	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorooctanoic acid (PFOA)	31		1.9	0.83	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorononanoic acid (PFNA)	11		1.9	0.26	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorodecanoic acid (PFDA)	1.3	J	1.9	0.30	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluoroundecanoic acid (PFUnA)	2.2		1.9	1.1	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorotridecanoic acid (PFTrIA)	ND		1.9	1.3	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorobutanesulfonic acid (PFBS)	3.2		1.9	0.19	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorohexanesulfonic acid (PFHxS)	15	B	1.9	0.17	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.48	J	1.9	0.18	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorooctanesulfonic acid (PFOS)	37		1.9	0.53	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/07/20 06:00	01/07/20 23:01	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.34	ng/L		01/07/20 06:00	01/07/20 23:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		01/07/20 06:00	01/07/20 23:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		01/07/20 06:00	01/07/20 23:01	1
6:2 FTS	3.1	J	19	1.9	ng/L		01/07/20 06:00	01/07/20 23:01	1
8:2 FTS	ND		19	1.9	ng/L		01/07/20 06:00	01/07/20 23:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	52		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C5 PFPeA	74		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C2 PFHxA	77		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C4 PFHpA	88		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C4 PFOA	86		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C5 PFNA	93		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C2 PFDA	97		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C2 PFUnA	89		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C2 PFDoA	83		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C2 PFTeDA	78		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C3 PFBS	96		25 - 150	01/07/20 06:00	01/07/20 23:01	1
18O2 PFHxS	90		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C4 PFOS	101		25 - 150	01/07/20 06:00	01/07/20 23:01	1
13C8 FOSA	83		25 - 150	01/07/20 06:00	01/07/20 23:01	1
d3-NMeFOSAA	72		25 - 150	01/07/20 06:00	01/07/20 23:01	1
d5-NEtFOSAA	72		25 - 150	01/07/20 06:00	01/07/20 23:01	1
M2-6:2 FTS	145		25 - 150	01/07/20 06:00	01/07/20 23:01	1
M2-8:2 FTS	99		25 - 150	01/07/20 06:00	01/07/20 23:01	1



# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: GM-27**  
 Date Collected: 12/26/19 11:40  
 Date Received: 12/31/19 08:45

**Lab Sample ID: 320-57401-3**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	180	B	1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluoropentanoic acid (PFPeA)	150		1.9	0.46	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorohexanoic acid (PFHxA)	140		1.9	0.54	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluoroheptanoic acid	100		1.9	0.23	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorooctanoic acid (PFOA)	170		1.9	0.79	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorononanoic acid (PFNA)	100		1.9	0.25	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorodecanoic acid (PFDA)	44		1.9	0.29	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluoroundecanoic acid (PFUnA)	4.5		1.9	1.0	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorobutanesulfonic acid (PFBS)	7.3		1.9	0.19	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorohexanesulfonic acid (PFHxS)	42	B	1.9	0.16	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.6	J	1.9	0.18	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorooctanesulfonic acid (PFOS)	130		1.9	0.50	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		01/07/20 06:00	01/07/20 23:09	1
Perfluorooctanesulfonamide (FOSA)	7.6		1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	7.8	J	19	2.9	ng/L		01/07/20 06:00	01/07/20 23:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	18	J	19	1.8	ng/L		01/07/20 06:00	01/07/20 23:09	1
6:2 FTS	52		19	1.9	ng/L		01/07/20 06:00	01/07/20 23:09	1
8:2 FTS	3.7	J	19	1.9	ng/L		01/07/20 06:00	01/07/20 23:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	30		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C5 PFPeA	61		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C2 PFHxA	74		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C4 PFHpA	80		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C4 PFOA	84		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C5 PFNA	90		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C2 PFDA	104		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C2 PFUnA	111		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C2 PFDoA	118		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C2 PFTeDA	81		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C3 PFBS	127		25 - 150				01/07/20 06:00	01/07/20 23:09	1
18O2 PFHxS	117		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C4 PFOS	146		25 - 150				01/07/20 06:00	01/07/20 23:09	1
13C8 FOSA	92		25 - 150				01/07/20 06:00	01/07/20 23:09	1
d3-NMeFOSAA	105		25 - 150				01/07/20 06:00	01/07/20 23:09	1
d5-NEtFOSAA	119		25 - 150				01/07/20 06:00	01/07/20 23:09	1
M2-6:2 FTS	332	*	25 - 150				01/07/20 06:00	01/07/20 23:09	1
M2-8:2 FTS	427	*	25 - 150				01/07/20 06:00	01/07/20 23:09	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: GM-27I**

**Lab Sample ID: 320-57401-4**

Date Collected: 12/26/19 11:48

Matrix: Water

Date Received: 12/31/19 08:45

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	50	B	1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluoropentanoic acid (PFPeA)	74		1.9	0.47	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorohexanoic acid (PFHxA)	63		1.9	0.55	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluoroheptanoic acid	48		1.9	0.24	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorooctanoic acid (PFOA)	77		1.9	0.81	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorononanoic acid (PFNA)	35		1.9	0.26	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorodecanoic acid (PFDA)	22		1.9	0.30	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluoroundecanoic acid (PFUnA)	8.6		1.9	1.1	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorobutanesulfonic acid (PFBS)	6.0		1.9	0.19	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorohexanesulfonic acid (PFHxS)	22	B	1.9	0.16	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorooctanesulfonic acid (PFOS)	69		1.9	0.52	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/07/20 06:00	01/07/20 23:17	1
Perfluorooctanesulfonamide (FOSA)	3.5		1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.2	J	19	3.0	ng/L		01/07/20 06:00	01/07/20 23:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	16	J	19	1.8	ng/L		01/07/20 06:00	01/07/20 23:17	1
6:2 FTS	35		19	1.9	ng/L		01/07/20 06:00	01/07/20 23:17	1
8:2 FTS	3.2	J	19	1.9	ng/L		01/07/20 06:00	01/07/20 23:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	38		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C5 PFPeA	70		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C2 PFHxA	79		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C4 PFHpA	83		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C4 PFOA	90		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C5 PFNA	98		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C2 PFDA	105		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C2 PFUnA	113		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C2 PFDoA	119		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C2 PFTeDA	97		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C3 PFBS	130		25 - 150				01/07/20 06:00	01/07/20 23:17	1
18O2 PFHxS	115		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C4 PFOS	139		25 - 150				01/07/20 06:00	01/07/20 23:17	1
13C8 FOSA	104		25 - 150				01/07/20 06:00	01/07/20 23:17	1
d3-NMeFOSAA	113		25 - 150				01/07/20 06:00	01/07/20 23:17	1
d5-NEtFOSAA	121		25 - 150				01/07/20 06:00	01/07/20 23:17	1
M2-6:2 FTS	312	*	25 - 150				01/07/20 06:00	01/07/20 23:17	1
M2-8:2 FTS	382	*	25 - 150				01/07/20 06:00	01/07/20 23:17	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: GM-28**  
 Date Collected: 12/26/19 12:54  
 Date Received: 12/31/19 08:45

**Lab Sample ID: 320-57401-5**  
 Matrix: Water

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	110	B	1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluoropentanoic acid (PFPeA)	180		1.9	0.47	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorohexanoic acid (PFHxA)	170		1.9	0.55	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluoroheptanoic acid	130		1.9	0.24	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorooctanoic acid (PFOA)	340		1.9	0.81	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorononanoic acid (PFNA)	81		1.9	0.26	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorodecanoic acid (PFDA)	22		1.9	0.30	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluoroundecanoic acid (PFUnA)	8.6		1.9	1.1	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorobutanesulfonic acid (PFBS)	22		1.9	0.19	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorohexanesulfonic acid (PFHxS)	130	B	1.9	0.16	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluoroheptanesulfonic acid (PFHpS)	5.7		1.9	0.18	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorooctanesulfonic acid (PFOS)	270		1.9	0.52	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/07/20 06:00	01/07/20 23:25	1
Perfluorooctanesulfonamide (FOSA)	1.9		1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		01/07/20 06:00	01/07/20 23:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.9	J	19	1.8	ng/L		01/07/20 06:00	01/07/20 23:25	1
6:2 FTS	23		19	1.9	ng/L		01/07/20 06:00	01/07/20 23:25	1
8:2 FTS	6.6	J	19	1.9	ng/L		01/07/20 06:00	01/07/20 23:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	22	*	25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C5 PFPeA	51		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C2 PFHxA	71		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C4 PFHpA	78		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C4 PFOA	87		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C5 PFNA	94		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C2 PFDA	123		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C2 PFUnA	142		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C2 PFDoA	147		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C2 PFTeDA	135		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C3 PFBS	119		25 - 150				01/07/20 06:00	01/07/20 23:25	1
18O2 PFHxS	122		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C4 PFOS	150		25 - 150				01/07/20 06:00	01/07/20 23:25	1
13C8 FOSA	115		25 - 150				01/07/20 06:00	01/07/20 23:25	1
d3-NMeFOSAA	128		25 - 150				01/07/20 06:00	01/07/20 23:25	1
d5-NEtFOSAA	136		25 - 150				01/07/20 06:00	01/07/20 23:25	1
M2-6:2 FTS	343	*	25 - 150				01/07/20 06:00	01/07/20 23:25	1
M2-8:2 FTS	396	*	25 - 150				01/07/20 06:00	01/07/20 23:25	1



# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: GM-28I**

**Lab Sample ID: 320-57401-6**

Date Collected: 12/26/19 13:02

Matrix: Water

Date Received: 12/31/19 08:45

**Method: 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	19	B	1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluoropentanoic acid (PFPeA)	34		1.9	0.47	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorohexanoic acid (PFHxA)	29		1.9	0.55	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluoroheptanoic acid	19		1.9	0.24	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorooctanoic acid (PFOA)	41		1.9	0.81	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorononanoic acid (PFNA)	12		1.9	0.26	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorodecanoic acid (PFDA)	5.8		1.9	0.30	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluoroundecanoic acid (PFUnA)	4.7		1.9	1.0	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorobutanesulfonic acid (PFBS)	5.7		1.9	0.19	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorohexanesulfonic acid (PFHxS)	15	B	1.9	0.16	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.67	J	1.9	0.18	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorooctanesulfonic acid (PFOS)	58		1.9	0.52	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31	ng/L		01/07/20 06:00	01/07/20 23:33	1
Perfluorooctanesulfonamide (FOSA)	2.2		1.9	0.33	ng/L		01/07/20 06:00	01/07/20 23:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		01/07/20 06:00	01/07/20 23:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	6.2	J	19	1.8	ng/L		01/07/20 06:00	01/07/20 23:33	1
6:2 FTS	15	J	19	1.9	ng/L		01/07/20 06:00	01/07/20 23:33	1
8:2 FTS	ND		19	1.9	ng/L		01/07/20 06:00	01/07/20 23:33	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C4 PFBA	52		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C5 PFPeA	79		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C2 PFHxA	85		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C4 PFHpA	98		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C4 PFOA	96		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C5 PFNA	97		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C2 PFDA	121		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C2 PFUnA	115		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C2 PFDoA	114		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C2 PFTeDA	108		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C3 PFBS	112		25 - 150				01/07/20 06:00	01/07/20 23:33	1
18O2 PFHxS	106		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C4 PFOS	118		25 - 150				01/07/20 06:00	01/07/20 23:33	1
13C8 FOSA	111		25 - 150				01/07/20 06:00	01/07/20 23:33	1
d3-NMeFOSAA	109		25 - 150				01/07/20 06:00	01/07/20 23:33	1
d5-NEtFOSAA	116		25 - 150				01/07/20 06:00	01/07/20 23:33	1
M2-6:2 FTS	242	*	25 - 150				01/07/20 06:00	01/07/20 23:33	1
M2-8:2 FTS	273	*	25 - 150				01/07/20 06:00	01/07/20 23:33	1

# Client Sample Results

Client: Pace Analytical Services, LLC  
 Project/Site: Pace PFAS Testing

Job ID: 320-57401-1  
 SDG: WELL CLUSTER 26,27,28 ROUTINE

**Client Sample ID: DUP**

**Lab Sample ID: 320-57401-7**

**Date Collected: 12/26/19 11:48**

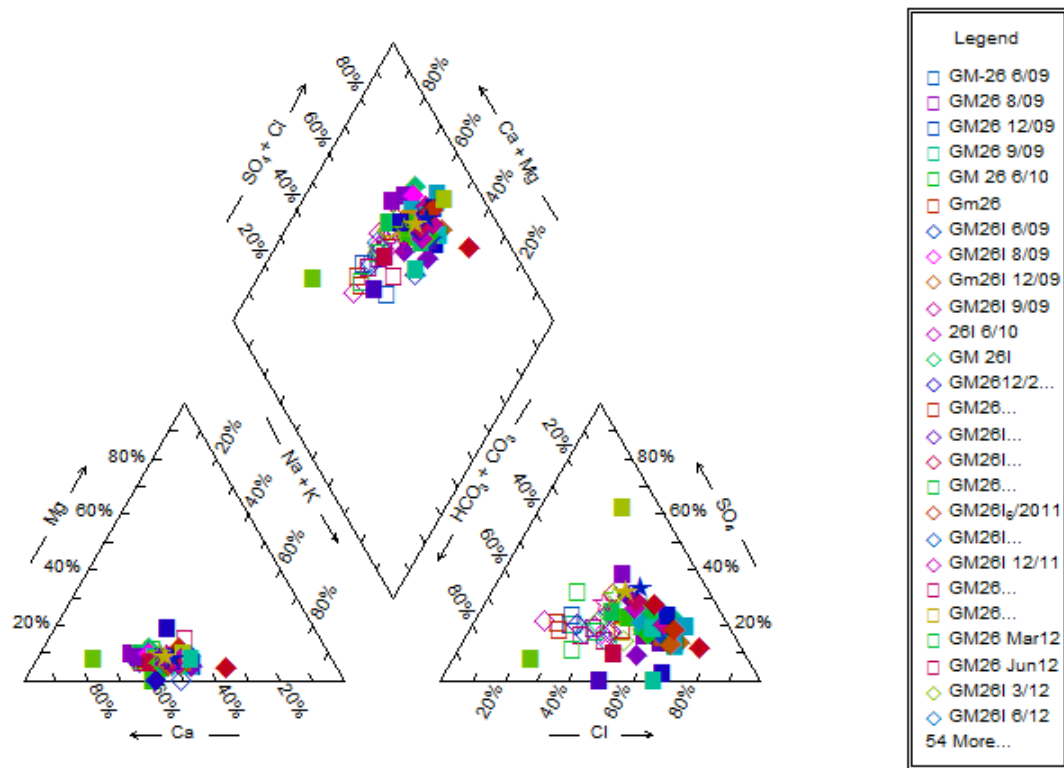
**Matrix: Water**

**Date Received: 12/31/19 08:45**

**Method: 537 (modified) - Fluorinated Alkyl Substances**

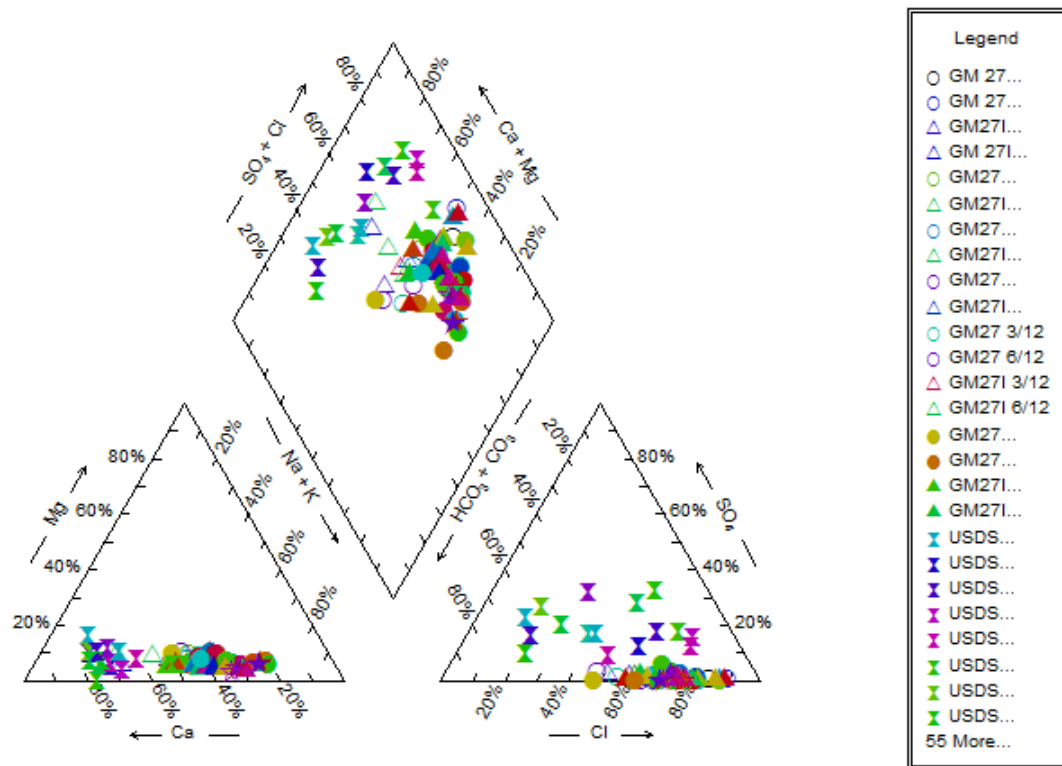
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	59	B	1.8	0.32	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluoropentanoic acid (PFPeA)	84		1.8	0.45	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorohexanoic acid (PFHxA)	75		1.8	0.53	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluoroheptanoic acid	57		1.8	0.23	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorooctanoic acid (PFOA)	95		1.8	0.78	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorononanoic acid (PFNA)	43		1.8	0.25	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorodecanoic acid (PFDA)	23		1.8	0.29	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluoroundecanoic acid (PFUnA)	7.9		1.8	1.0	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorobutanesulfonic acid (PFBS)	5.5		1.8	0.18	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorohexanesulfonic acid (PFHxS)	25	B	1.8	0.16	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorooctanesulfonic acid (PFOS)	74		1.8	0.50	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		01/07/20 06:00	01/07/20 23:41	1
Perfluorooctanesulfonamide (FOSA)	3.7		1.8	0.32	ng/L		01/07/20 06:00	01/07/20 23:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	J	18	2.9	ng/L		01/07/20 06:00	01/07/20 23:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	14	J	18	1.7	ng/L		01/07/20 06:00	01/07/20 23:41	1
6:2 FTS	36		18	1.8	ng/L		01/07/20 06:00	01/07/20 23:41	1
8:2 FTS	3.1	J	18	1.8	ng/L		01/07/20 06:00	01/07/20 23:41	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C4 PFBA	35		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C5 PFPeA	66		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C2 PFHxA	77		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C4 PFHpA	83		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C4 PFOA	88		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C5 PFNA	100		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C2 PFDA	108		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C2 PFUnA	122		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C2 PFDoA	130		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C2 PFTeDA	101		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C3 PFBS	125		25 - 150				01/07/20 06:00	01/07/20 23:41	1
18O2 PFHxS	111		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C4 PFOS	138		25 - 150				01/07/20 06:00	01/07/20 23:41	1
13C8 FOSA	100		25 - 150				01/07/20 06:00	01/07/20 23:41	1
d3-NMeFOSAA	112		25 - 150				01/07/20 06:00	01/07/20 23:41	1
d5-NEtFOSAA	123		25 - 150				01/07/20 06:00	01/07/20 23:41	1
M2-6:2 FTS	305	*	25 - 150				01/07/20 06:00	01/07/20 23:41	1
M2-8:2 FTS	397	*	25 - 150				01/07/20 06:00	01/07/20 23:41	1

Piper Diagram Cluster 26/26I



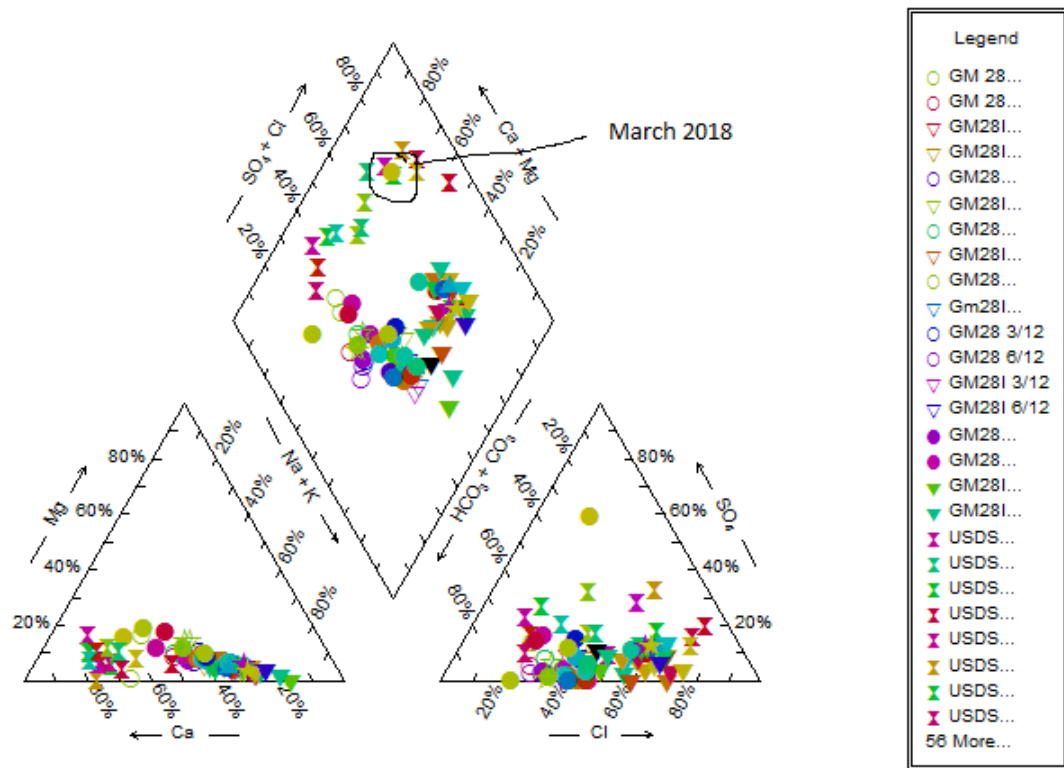
**Figure 2.** Piper Diagram. Hollow square (GM 26 preoperational), Hollow diamond (GM26I preoperational). Solid square (operational GM26). Solid diamond (GM26I operational). Solid star September and December 2019 GM26I. Hollow star September and December 2019 GM-26.

Piper Diagram Well Cluster 27



**Figure 3.** Piper diagram displaying pre operational and operational phase groundwater data from well cluster 27. Hollow circle (GM 27 preoperational), Hollow delta (GM271 preoperational). Solid circle (operational GM27). Solid delta (GM271 operational). Solid star September and December 2019 GM27. Hollow star September and December 2019 GM-27I. Solid hourglass USDS/stormwater data.

Piper Diagram Cluster 28



**Figure 4.** Piper diagram displaying pre operational and operational phase groundwater data from well cluster 28. Hollow circle (GM 28 preoperational), Hollow del (GM28I preoperational). Solid circle (operational GM28). Solid del (GM28I operational). Solid star September and December 2019 GM28I. Hollow star September and December 2019 GM-28. Solid hourglass USDS/stormwater data.

Piper Diagram Cell 7 PLCRS

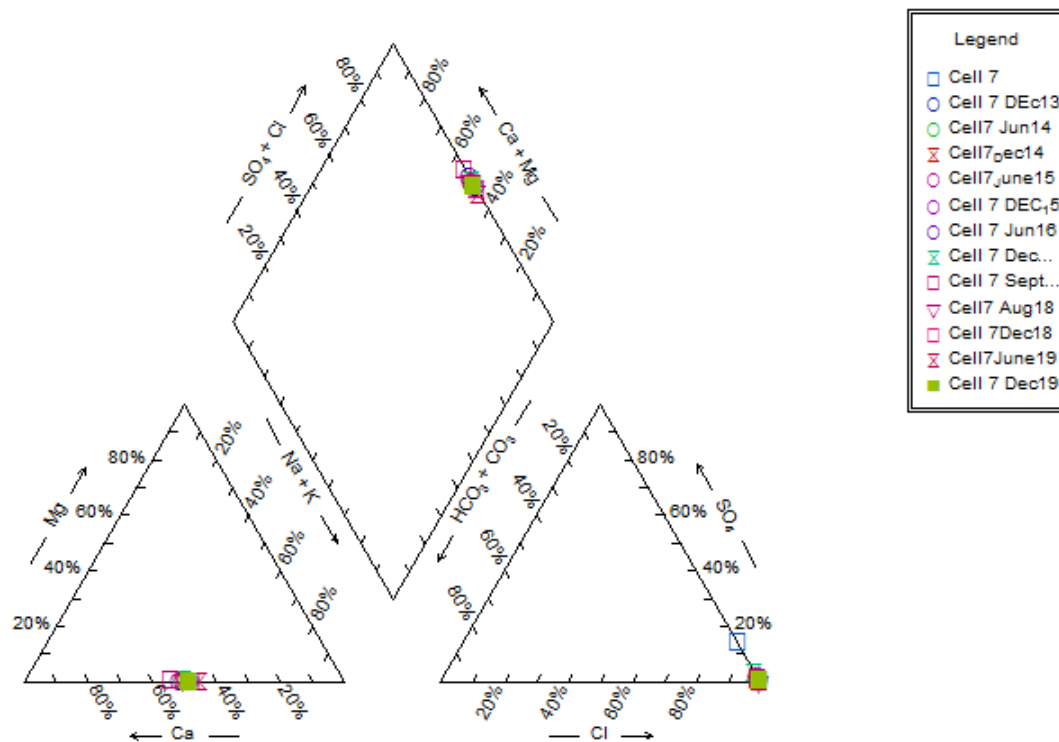


Figure 5. Piper diagram of leachate from the Cell 7 ash facility.

Piper Diagram GM4

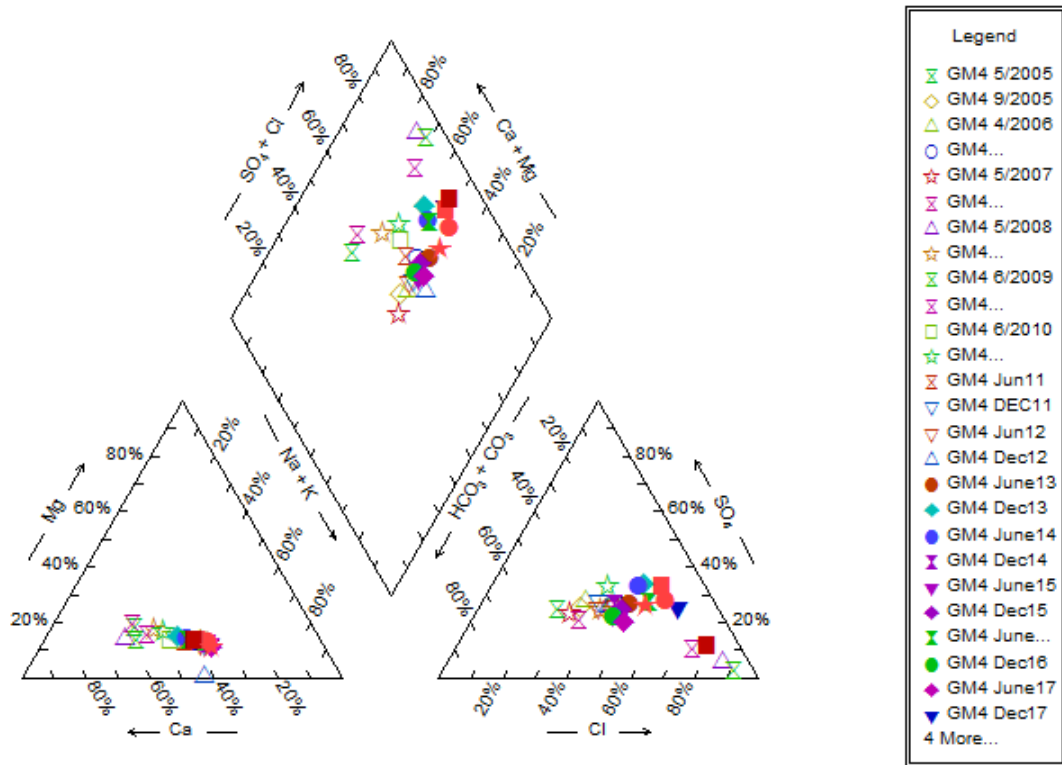


Figure 6. Piper Diagram of GM-4. Solid red star – December 2019

### Piper Diagram GM5

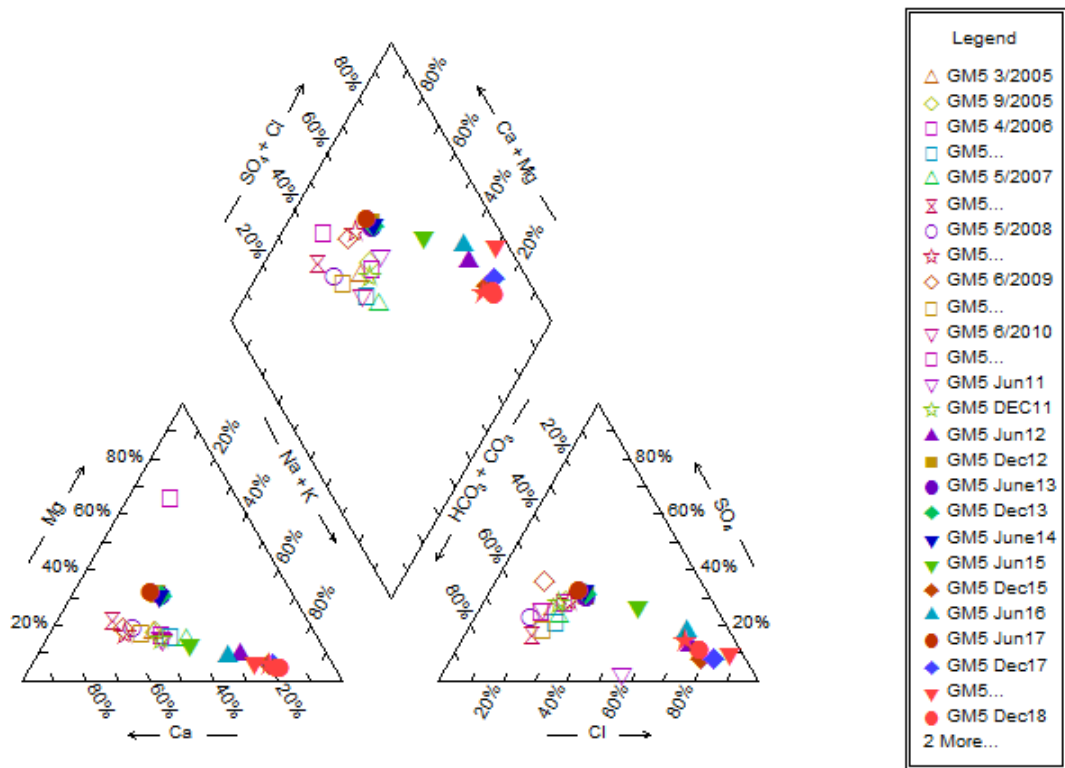


Figure 7. Piper Diagram GM-5. Red Star-December 2019.



Piper Diagram GM-6

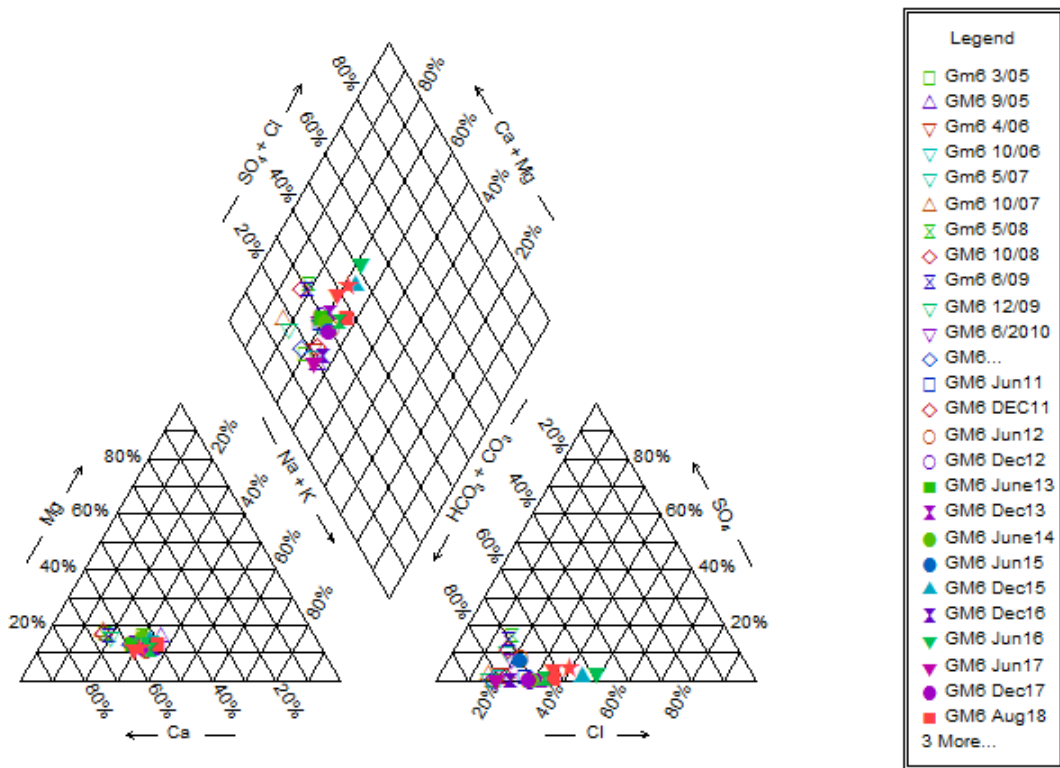


Figure 8. Piper Diagram GM-6. Red star – December 2019.

Piper Diagram GM7

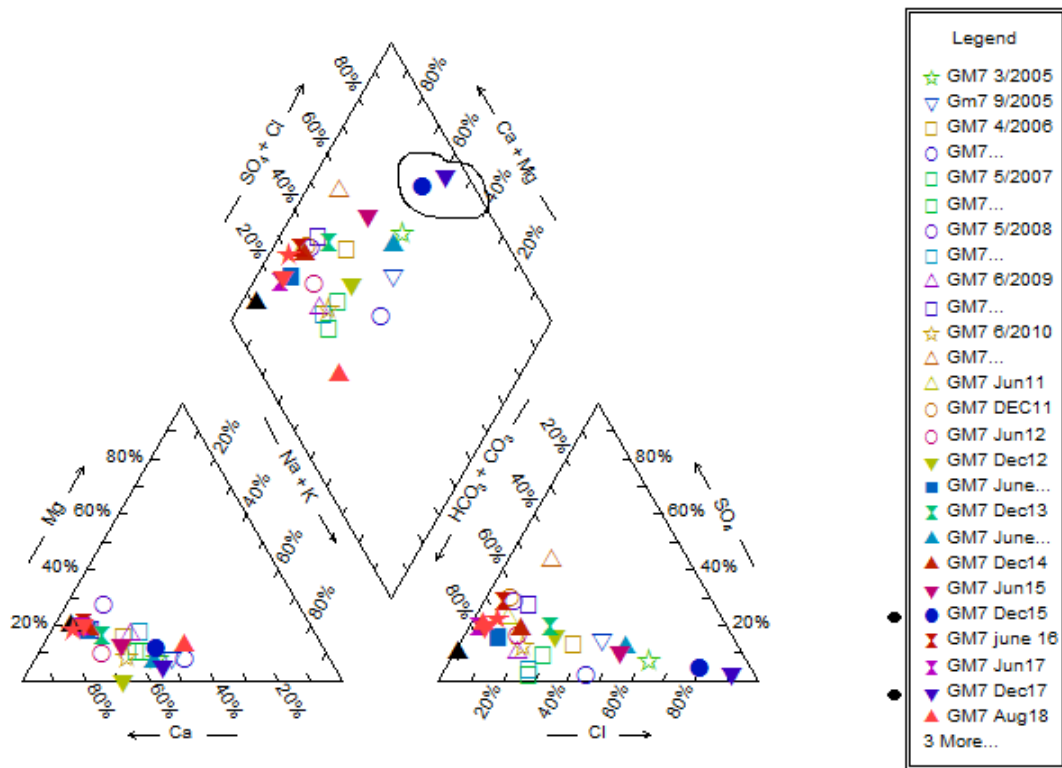


Figure 9. Piper Diagram GM-7. Red star-December 2019.

Piper Diagram GM15

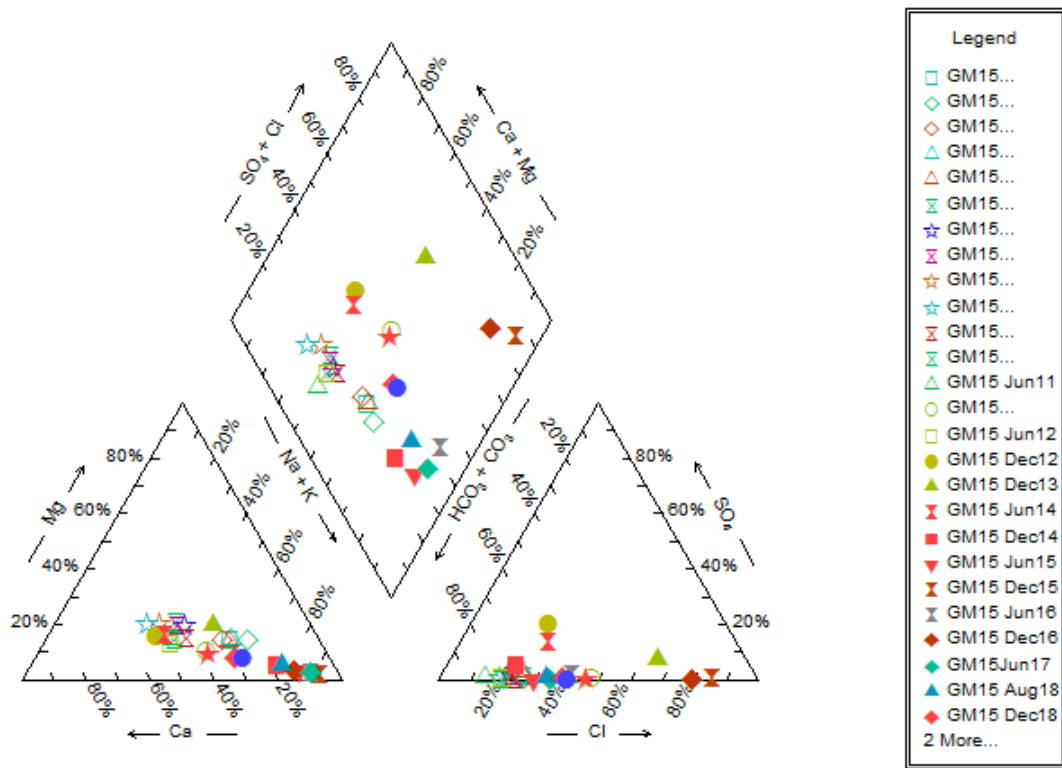


Figure 10. Piper diagram GM-15. Red Star-December 2019.

Piper Diagram GM16

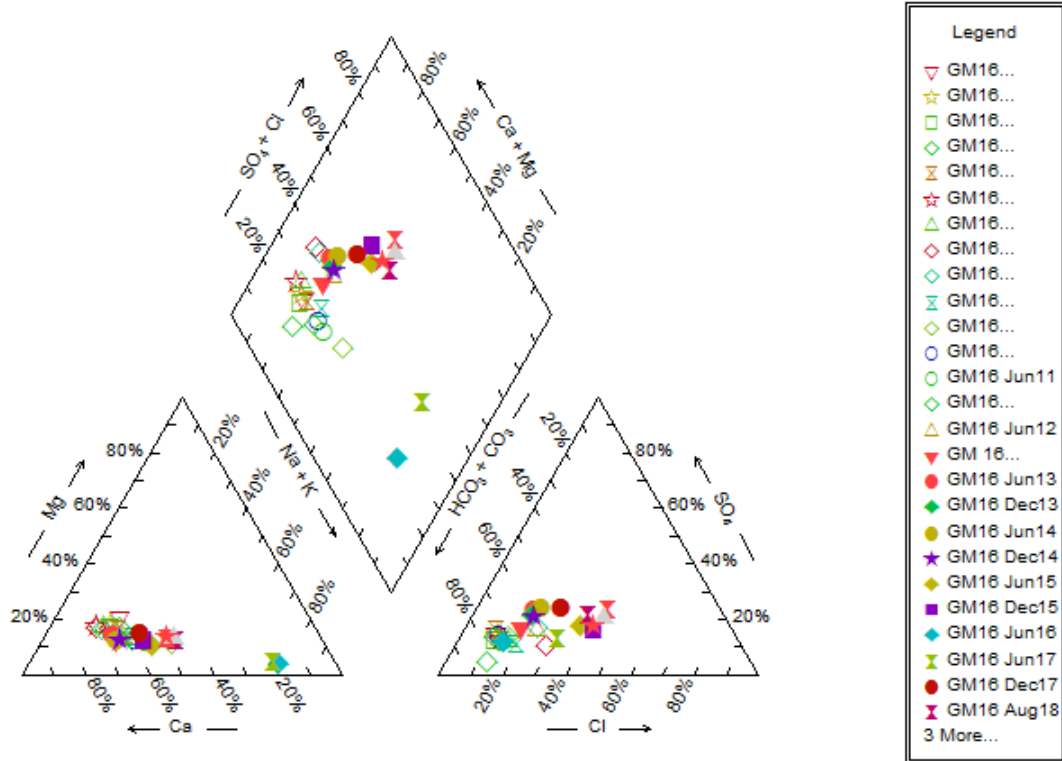


Figure 11. Piper diagram GM-16. Red star-December 2019.

Piper Diagram GM17

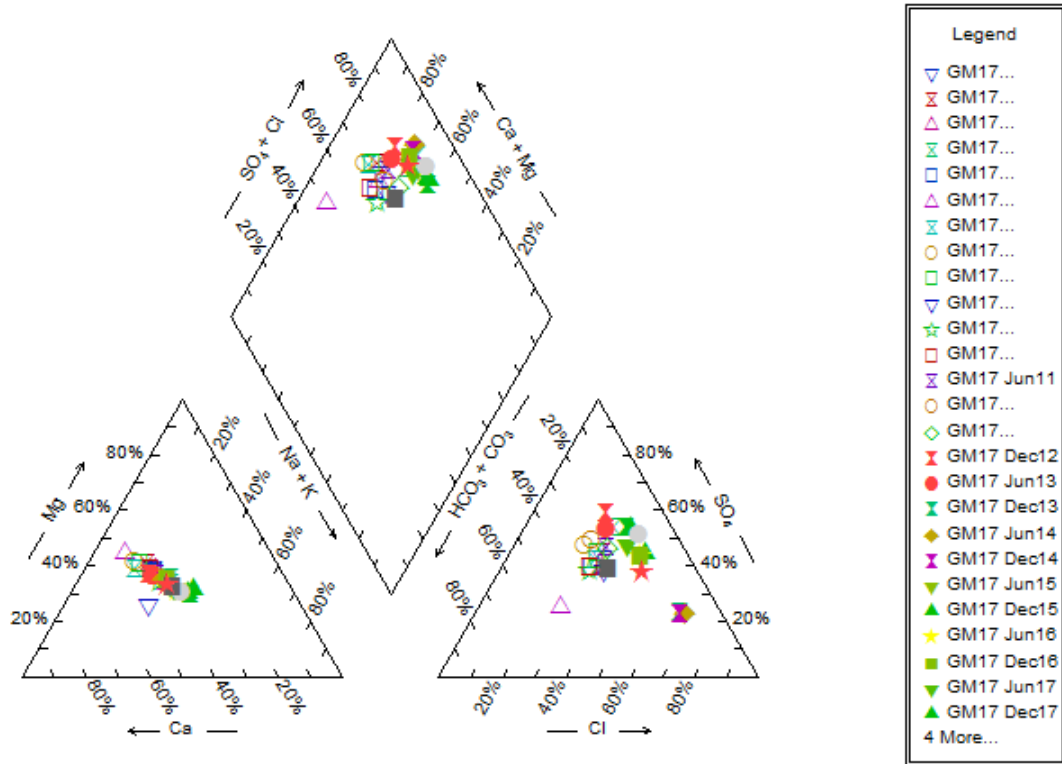


Figure 12. Piper diagram GM-17. Red star-December 2019.

Piper Diagram GM18

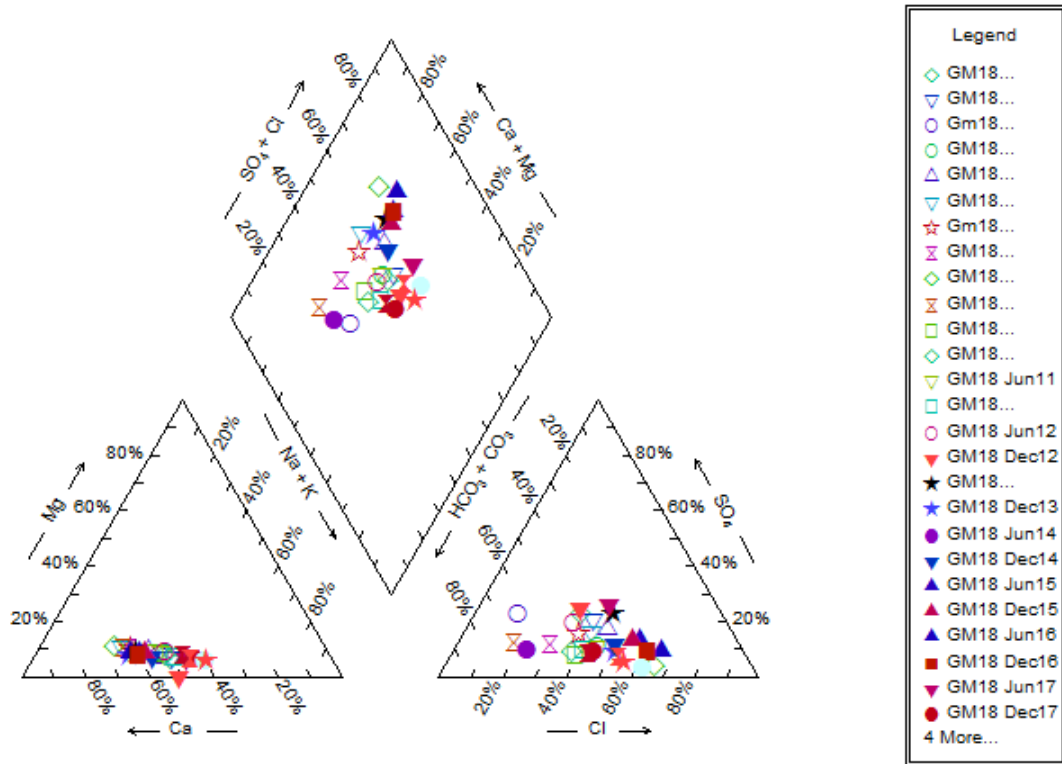


Figure 13. Piper diagram GM-18. Red star-December 2019.

Piper Diagram GM19

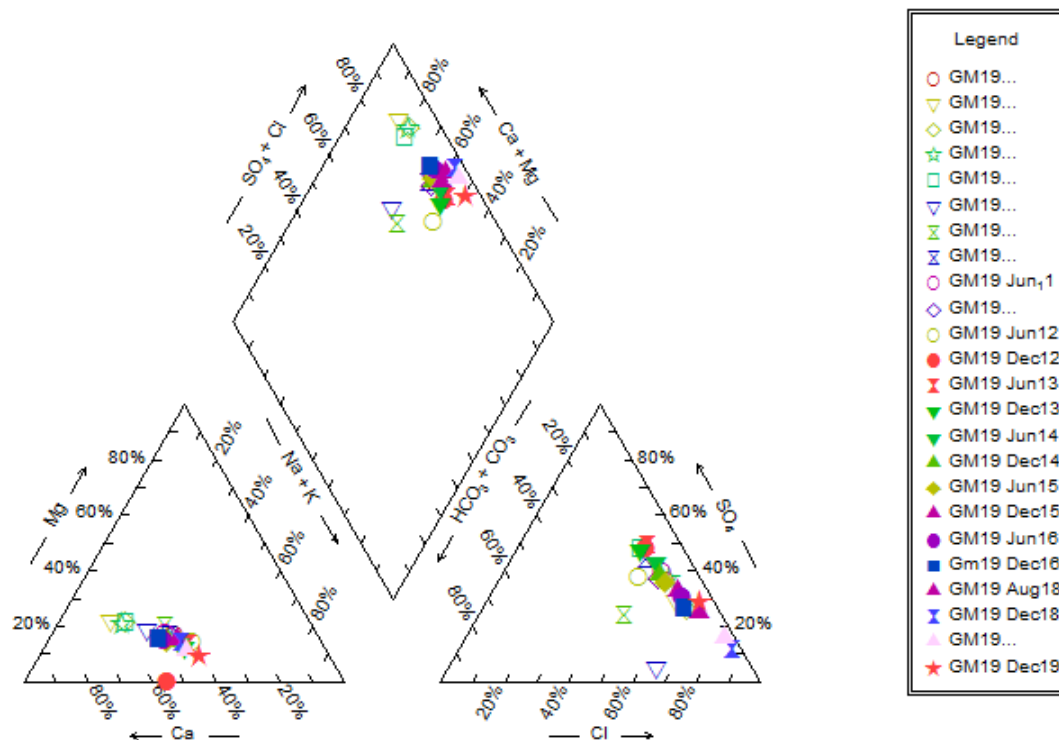


Figure 14. Piper diagram GM-19. Red star-December 2019.

Piper Diagram-USDS

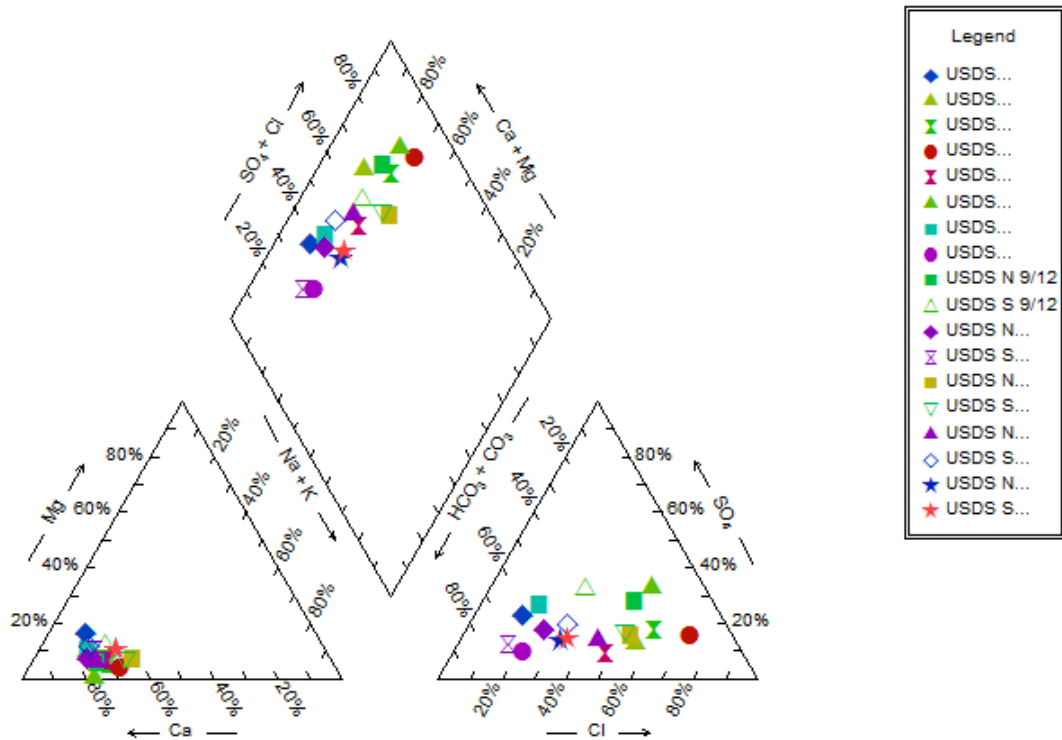


Figure 15. Piper diagram of stormwater data. Red and blue stars, December 2018 data.

### Summary

Babylon’s GMP report is prepared semiannually. Beginning in 2009 the GMP was expanded to include groundwater monitoring associated with the construction of Cell 7. Preoperational sampling of Cell 7 occurred from 2009 through September 2012 and was used to establish baseline data. The initial sampling for the operational phase of the GMP occurred in December 2012. This report focuses on data accrued for the September and December 2019 GMP.

TOBDEC reviewed the laboratory data package as part of the GMP QA/QC program which is outlined within the introduction to this report. Each data package was certified by the laboratory (Pace Analytical and Eurofins TestAmerica) as being in compliance with the laboratories quality assurance manual both technically and for completeness. Any issues, deficiencies or flagging of results were summarized in the narratives prepared by the laboratory and can be found in appendix 1 of this report.

Review of the historical and laboratory data from the December 2019 for the traditional GMP:



- The December 2019 laboratory results largely conform to historical datasets with the following notations:
  - Indicators from monitoring points GM-6 and 7 remain variable during sampling for the GMP.
    - Leachate indicators (chloride, alkalinity and calcium) for June and December 2019 at GM-6 were notably reduced from recent values.
    - Chloride at GM-7 is erratic but has been observed at background 5 of the past 6 samples. Chloride at GM-5 has been observed at elevated values since December 2015 (except June 2017). Chloride was elevated at GM4 for June 2019 and returned to its historical range for December 2019.
    - Calcium remains elevated at GM- 7.
    - TKN had been elevated at GM-6 (December 2016-August 2018) and has been observed within its historical range for June and December 2019.
  - A number of indicators for traditional GMP were observed at or near background for December 2019.
    - Chloride at well GM-7 was at background and slightly above background at GM-16. As noted above, chloride at GM-7 has been observed at background in five of the past 6 sampling events.
    - Calcium at wells GM-4, 5, 16, 17 and 19 were at background.
    - TKN was observed at background at wells GM-4, 5, 7, 16, 17, 18 and 19. TKN at GM-6 and GM-15 remain the only wells within this network with measurable values for TKN. TKN at GM's 6 and 15 remain variable and are within their historical range.
    - TDS at wells GM-4, 16 and 17 were observed at background. TDS at GM-15 (6 mg/l) for June 2019 was well below its historical range and was deemed questionable in the June 2019 GMP report. TDS at GM-15 (584 mg/l) returned to its historical range in December 2019.
    - Alkalinity at monitoring points GM-4, 5, 16, 17 and 19 were observed at or near background.
  - Piper diagrams have been updated at GM-4, 5, 6, 7, 15, 16, 17, 18 and 19 (figures 6-14).
    - The Piper diagram depicted in figure 8 continues to illustrate that the data accrued for GM-6 coincides with the historical data from this monitoring point. The Piper diagram at GM-6 does not share a geochemical fingerprint as established by leachate.
    - The Piper diagrams for GM's 4 and 5 display random values where the lower right segment of the Piper diagram illustrate a greater concentration of chloride migrating to the area of the diagram occupied by leachate and the final data points falling within the area designated as groundwater and leachate mix on the Grosser diagram (figure 1). At GM-4 elevated values of chloride from May 2008, June and December 2009 and June 2019 coincide with the

above discussed migration of data points in the corresponding Piper diagram. At GM-5 the shift in the lower left quadrant from December 2015-2019 (also noted June 2012, not noted or return to historical value June 2017) coincides with elevated values of sodium, and the shift in the lower right portion of the diagram from during that time period coincides with elevated values of chloride.

- The Piper diagram for GM-7 provides a much less decipherable pattern, however the data points for December 2015 and December 2017 are notable whereby those data points are isolated, migrating toward the groundwater leachate mix area of the diagram. Elevated chloride values are noted during these sampling events.
  - The Piper diagrams for the second row of monitoring points did not include any notable observations for December 2019. These diagrams at times include random shifts to their fingerprints. These shifts were noted on December 2013, 2015 and 2016 at GM-15, June 2016 and 2017 at GM-16 (elevated sodium and reduced value of calcium) and December 2018 and June 2019 at GM-19 (elevated chloride).
- Overall, the concentration of leachate indicators at GM's-4, 16, 17 and 19 continue to be reduced from pre-remedial values and are consistently observed at or near background values (note, location GM-19 observed elevated values for chloride for December 2018 and June 2019 but was observed slightly above background for December 2019). Indicators at GM-6 had been exceeding their historical range since 2015 until June 2019, however it is noted that the Piper diagram for GM-6 has not shifted nor does the diagram share the geochemical fingerprint established for leachate (figure 1). Indicators at GM-5 are at or near background except for chloride and TDS which have recently been observed above their historical range. Indicators at GM's 7 and 15 have been erratic displaying random elevated and background values.

Leakage rate values (appendix 2) from the SA, Cell 7 and ONU (west) are generally within their historical range. Leakage rates at the ONU east have increased since 2016 from the average values observed from 2005-2015. Leakage rates at the ONU east were notably elevated from January-March 2019 and then returned to prior levels. This is likely the result of elevated rainfall from November 2018 to May 2019. Leakage rates at the NNU facility have been consistently monitored. Since 2017 the leakage rate has been observed to exceed the prior average leakage rate by approximately 2 orders of magnitude. It was noted for 2019 leakage rates at the NNU were further elevated January-June and then returned to the reduced range July-December 2019 (not to pre 2017 values). As noted above this is likely due to elevated rainfall values from November 2018 to May 2019 (appendix 2). The cause of the post 2017 leakage rate increase was previously believed to be a check valve malfunction/failure that allowed leachate being pumped from the NNU pump station to backflow into the secondary liner of the NNU facility. This repair was made and ALR values have not decreased. Solutions may entail an interim or permanent cap at the NNU facility<sup>5</sup>. The leakage rates from Cell 7 have been observed at +/- ~0.2 – 4 g/a/d.

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<sup>5</sup> Conversation with Tom Vetri, Deputy Commissioner TOBDEC, December 2019.

Upon review of the September and December 2019 GMP data for the Cell 7 facility:

- The average leakage rate for 2019 at Cell 7 is 4.2 gallons/acre/day.
- Hardness and Calcium exceeded their STV for March 2019 at GM-28 and were below their STV for June, September and December 2019. This was the first exceedance of an STV since March 2015 when hardness exceeded its STV at GM-28 and the second observation of an indicator exceeding their STV during the operational phase of the GMP. These results did not trigger any of the action/notification thresholds outlined in the GMP Addendum referenced above.
- Numerous indicators have exceeded their mean plus 3 (SD) at the upgradient wells (Wells 26 and 26I).
  - At GM-26:
    - Chloride and sodium exceeded their mean plus 3(SD) for parts of 2015, 2016. Chloride exceeded its mean plus 3(SD) for December 2018 and March 2019, sodium exceeded its mean plus 3(SD) for March 2019.
    - No indicator exceeded its mean plus 3(SD) value for September or December 2019. The Piper plot remained within its historical configuration for September and December 2019.
  - At GM-26I :
    - Hardness and calcium exceeded their mean plus 3(SD) values for parts of 2015 and 2016. Chloride exceeded its mean plus 3(SD) values for parts of 2015-2017.
    - Sodium exceeded its mean plus 3(SD) value for March 2015 and September 2015 through March 2017.
    - No indicators exceeded their mean plus 3(SD) value for September and December 2019. The Piper plot remains in its historical configuration for September and December 2019.

At the downgradient well clusters:

- At monitoring point GM-27:
  - No leachate indicator has exceeded their STV at GM-27 during the GMP.
  - TKN and ammonia are no longer included as leachate indicators, however each continue to be monitored for continuity. TKN and ammonia continue to exceed their mean plus 3(SD) value.
  - Hardness exceeded its mean plus 3(SD) for December 2014 and has not exceeded its mean plus 3(SD) value since. With this exception noted, indicators at GM-27 continue to be observed below their mean plus 3(SD) and STV levels.
  - Piper plot for 27 continues to remain within its historical configuration.
- At monitoring point 27I:
  - No leachate indicator has exceeded their STV at 27I during the GMP.
  - Chloride exceeded the mean plus 3(SD) value for the September 2019 sampling. Historically, chloride also exceeded the mean plus 3(SD) in March and June 2015 and December 2018.
  - Sodium exceeded its mean plus 3(SD) for June and September 2019. Historically, sodium also exceeded its mean plus 3(SD) in December 2018 and March 2015 sampling.

- TKN and ammonia have exceeded their mean plus 3(SD) value since June 2013 (TKN did not exceed its m-3SD for March 2019) It is noted that these parameters are no longer classified as leachate indicators for the GMP and are monitored solely for continuity.
- Leachate indicators at GM-27I continue to be observed below their STV.
- Piper plot for 27I continues to remain within its historical configuration.
- At monitoring point 28:
  - Hardness and calcium at GM-28 exceeded their STV for March 2019. All leachate indicators were below their STV and mean plus 3(SD) for June, September and December 2019. No action or notification thresholds were triggered by the March 2019 result. Historically, hardness had exceeded its STV at GM-28 in June 2015.
  - No other indicators have been observed exceeding their STV or mean plus 3(SD) at this monitoring location.
  - The Piper diagram for GM-28 remains within the general area delineated for well 28. Elevated sulfate in March 2018 produced the only overt breach into the stormwater fingerprint included on the diagram.
- At monitoring point 28I:
  - No leachate indicator has exceeded their STV at 28I during the GMP.
  - Chloride was observed above its mean plus 3(SD) value for September and December 2019. Chloride has frequently been observed above its mean plus 3(SD) value.
  - No other indicator was observed above its mean plus 3(SD) for September and December 2019. Sodium and calcium were observed above their mean plus 3(SD) values for June 2015 and March 2017. Hardness was observed above its mean plus 3(SD) during September 2014, December 2014, June 2015 and March 2017 sampling.
  - TKN was below its mean plus 3(SD) value for September and December 2019 sampling. TKN exceeded its mean plus 3(SD) during April 2017 and December 2018. TKN is no longer classified as an indicator and is monitored solely for continuity.
  - The Piper diagram for 28I remains within its historical configuration.
- Review of the tables and graphs comparing upgradient and downgradient monitoring points:
  - As noted in previous reports an increase in leachate indicators is noted in preoperational data circa 2008/2009, coinciding with the filling in of Lake Wyandanch during construction of the Cell 7 ash facility.
  - Leachate indicators from up gradient monitoring points (well cluster 26/26I) include a number of values exceeding pre-operational data. Leachate indicators from the downgradient monitoring points generally remain within preoperational thresholds. Chloride observed at GM 27I and GM-28I include slightly elevated values downgradient during the operational phase period. This is consistent with notations discussed in this report indicating chloride at these monitoring points have been observed exceeding mean plus 3(SD). No values of chloride have been

observed above their STV at these locations. Therefore the monitoring program does not exhibit evidence indicating a failure to the liner system.

Based upon analysis of all of the above information gathered for the September and December 2019 GMP, it can be reasonably concluded that the liner system in place for the Cell 7 ashfill is functioning as designed.

The next GMP report will include groundwater data collected for March and June 2020

# Appendix 1

## Laboratory Data from Pace Analytical Services Inc.

See attached disc

## BABYLON LANDFILL - FIELD DATA - 9/13/2019

### Wells GM-26 to GM-28 / Groundwater Sampling Data

WELL #	Well Survey Elevation	Well Size	Metal or PVC	TPVC (in ft) (Top of PVC)	TOC (in ft) (Top of Casing)	BOC (in ft) (Bottom of Casing)	One Well Volume (Gallons)	Three Well Volumes (Gallons)	Groundwater Contour Levels
GM-26		4"	*PVC	19.07		32.50	8.73	26.19	
GM-26I		4"	*PVC	18.70		42.50	15.47	46.41	
GM-27		4"	PVC	25.18	25.54	36.70	7.25	21.76	
GM-27I		4"	PVC	25.41	25.65	47.50	14.20	42.61	
GM-28		4"	PVC	24.75	24.99	37.50	8.13	24.39	
GM-28I		4"	PVC	25.05	25.27	46.91	14.07	42.20	

WELL #	Start Purge	Stop Purge	Well Notes For Sampling
GM-26	840	910	Turbid, orange tint, no odors
GM-26I	823	912	Turbid, yellow tint, no odors
GM-27	948	1030	Slightly turbid, yellow tint, small yellow particles, a lot of bubbles in sample, no odors
GM-27I	940	1040	Slightly turbid, yellow tint, small yellow particles, a lot of bubbles in sample, no odors
GM-28	1108	1145	Slightly turbid, green tint, no odors
GM-28I	1110	1156	Slightly turbid, black to grey tint, small grey particles, slight odors

Water Quality Parameters								
WELL #	Sampling Date	Sample Time	pH (SU)	ORP (mv)	Conductivity (umhos/cm2)	Temp. (oC)	Turbidity (NTU)	Dis. Oxygen (DO) mg/L
GM-26	9/13/2019	915	7.35	-71.9	1120	12.3	275.0	4.80
GM-26I	9/13/2019	925	7.38	-63.0	1003	16.8	204.0	3.57
GM-27	9/13/2019	1033	9.22	-170.1	1225	15.0	56.1	3.20
GM-27I	9/13/2019	1043	9.14	-165.2	1156	14.8	49.4	2.03
GM-28	9/13/2019	1200	8.31	-123.3	991	14.7	55.2	2.44
GM-28I	9/13/2019	1230	9.50	-189.4	1052	14.8	31.5	1.80

**Field Notes:** Duplicate performed on GM-27I @ 1043  
 Equipment Blank @ 1148 w/new bailer  
 MS/MSD performed on GM-28 @ 1200  
 GM-28I did not have a cover to the flush mount well

**Notes:** N/F : Not found due to high grass or deep snow.  
 N/S : No sample due to dry well or frozen well from extreme cold temps.  
 \*PVC ABOVE TOC

# BABYLON LANDFILL - FIELD DATA - DECEMBER 26, 2019

## Wells GM-26 to GM-28 / Groundwater Sampling Data

WELL #	Well Survey Elevation	Well Size	Metal or PVC	TPVC (in ft) (Top of PVC)	TOC (in ft) (Top of Casing)	BOC (in ft) (Bottom of Casing)	One Well Volume (Gallons)	Three Well Volumes (Gallons)	Groundwater Contour Levels
GM-26		4"	*PVC	18.97		32.50	8.84	26.51	
GM-26I		4"	*PVC	18.61		42.50	15.60	46.80	
GM-27		4"	PVC	24.95	25.32	36.70	7.43	22.29	
GM-27I		4"	PVC	25.17	25.41	47.50	14.42	43.27	
GM-28		4"	PVC	24.64	24.85	37.50	8.26	24.78	
GM-28I		4"	PVC	24.85	25.10	46.91	14.24	42.73	

WELL #	Start Purge	Stop Purge	Well Notes For Sampling
GM-26	1345	1426	Turbid, orange tint, no odors
GM-26I	1348	1420	Turbid, orange tint, no odors
GM-27	1050	1138	Slightly cloudy, yellow tint, no odors
GM-27I	1045	1146	Clear, no odors
GM-28	1215	1253	Slightly turbid, yellow tint, no odors
GM-28I	1218	1300	Clear, grey tint, small black particles, no odors

### Water Quality Parameters

WELL #	Sampling Date	Sample Time	pH (SU)	ORP (mv)	Conductivity (umhos/cm2)	Temp. (oC)	Turbidity (NTU)	Dis. Oxygen (DO) mg/L
GM-26	12/26/2019	1430	7.55	-82.2	679	13.5	235.0	5.16
GM-26I	12/26/2019	1423	7.61	-83.2	916	12.2	209.0	4.23
GM-27	12/26/2019	1140	9.27	-170.9	1466	12.0	25.6	2.33
GM-27I	12/26/2019	1148	8.98	-155.4	1394	13.0	14.7	4.31
GM-28	12/26/2019	1254	8.03	-107.2	989	14.9	49.7	2.94
GM-28I	12/26/2019	1302	9.65	-191.1	889	15.4	17.5	1.03

**Field Notes:** Duplicate performed on GM-27I @ 1148  
 Equipment Blank @ 1500 on 12-26-2019 w/new bailer  
 MS/MSD performed on ONU-SLCRS @ 900  
 GM-28I did not have a cover to the flush mount well

**Notes:** N/F : Not found due to high grass or deep snow.  
 N/S : No sample due to dry well or frozen well from extreme cold temps.  
 \*PVC ABOVE TOC



# BABYLON LANDFILL - FIELD DATA - DECEMBER 26, 2019

## Leachate Sampling Data

WELL #	Date	Start Purge	Stop Purge	Gallons Purged	Well Notes For Sampling
NNU-PLCRS	12/26/2019	834	839	~ 40	Clear, strong odors
NNU-SLCRS	12/26/2019	823	828	~ 40	Cloudy, white tint, strong odors
ONU-SLCRS	12/26/2019	854	859	~ 60	Clear, yellow tint, strong odors
SA-SLCRS	12/26/2019	Direct Sample	Direct Sample	0	Slightly cloudy, no odors, slight yellow tint
CELL - 7	12/26/2019	Direct Sample	Direct Sample	0	Clear, slight green tint, strong odors

## Leachate Parameters

WELL #	Sampling Time	pH (SU)	ORP (mv)	Conductivity (umhos/cm2)	Temp. (oC)	Turbidity (NTU)	Dissolved Oxygen (DO) mg/L
NNU-PLCRS	840	8.49	-131.4	2250	14.8	5.18	3.03
NNU-SLCRS	830	7.74	-92.5	2235	13.0	80.20	2.17
ONU-SLCRS	900	7.59	-84.9	2248	13.1	52.80	5.76
SA-SLCRS	1325	7.24	-65.5	2145	13.4	37.20	2.29
CELL - 7	948	7.48	-79.2	2194	9.8	7.58	1.70

**NNU-PLCRS: New Northern U Primary \* One Tap Location for Primary/Secondary (Top Road)**

**NNU-SLCRS: New Northern U Secondary \* One Tap Location for Primary/Secondary (Top Road)**

**ONU-SLCRS: Old Northern U Secondary \*One Tap Location for Primary/Secondary (Lower Road)**

**SA-SLCRS: Southern Ash Secondary \*Use Bailer / Square Metal Door**

**CELL 7: Primary System \* Use Bailer / First Round Black Cover (Left Cover)**

# BABYLON LANDFILL - FIELD DATA - DECEMBER 27, 2019

## Traditional Wells - Groundwater Sampling Data

WELL #	Well Survey Elevation	Well Size	Metal or PVC	TPVC (in ft) (Top of PVC)	TOC (in ft) (Top of Casing)	BOC (in ft) (Bottom of Casing)	One Well Volume (Gallons)	Three Well Volumes (Gallons)	Groundwater Contour Levels
GM-2D	69.25	4"	PVC	25.20	26.02	86.00	39.17	117.50	43.23
GM-4D	62.43	4"	PVC	17.96	18.60	91.40	47.54	142.62	43.83
GM-5D	62.35	4"	PVC	18.45	18.90	91.80	47.60	142.81	43.45
GM-6D	63.84	4"	PVC	20.08	20.25	92.80	47.38	142.13	43.59
GM-7D	63.23	4"	PVC	19.08	19.76	91.10	46.59	139.76	43.47
GM-15D	50.74	4"	PVC	11.41	11.80	84.50	47.47	142.42	38.94
GM-16D	?	4"	PVC	8.00	8.37	87.00	51.35	154.04	?
GM-17D	52.09	4"	PVC	13.35	13.75	87.70	48.29	144.87	38.34
GM-18D	?	4"	PVC	13.68	14.07	78.00	41.75	125.24	?
GM-19D	53.34	4"	PVC	13.35	13.55	87.40	48.22	144.67	39.79

WELL #	Start Purge	Stop Purge	Well Notes For Sampling
GM-2D	1250	1315	Clear, no odors
GM-4D	1008	1034	Clear, no odors, some black particles
GM-5D	1045	1113	Clear, no odors
GM-6D	1125	1151	Clear to slightly turbid, no odors
GM-7D	1202	1230	Clear, no odors
GM-15D	815	841	Turbid, yellow-orange tint, no odors <b>(Well flush with road. Paved around lip of well cover)</b>
GM-16D	735	805	Slightly turbid, orange tint, no odors
GM-17D	700	726	Clear, no odors
GM-18D	915	944	Clear, no odors
GM-19D	900	926	Clear, no odors

## Water Quality Parameters

WELL #	Sampling Date	Sample Time	pH (SU)	ORP (mv)	Conductivity (umhos/cm2)	Temp. (oC)	Turbidity (NTU)	Dis. Oxygen (DO) mg/L
GM-2D	12/27/2019	1320	6.22	-20.6	199	12.8	9.30	2.15
GM-4D	12/27/2019	1038	6.81	-41.1	291	15.0	19.60	2.66
GM-5D	12/27/2019	1118	7.29	-67.3	712	14.9	31.70	2.08
GM-6D	12/27/2019	1155	7.50	-82.7	836	16.4	71.20	1.40
GM-7D	12/27/2019	1235	8.43	-130.1	725	14.1	13.10	7.52
GM-15D	12/27/2019	845	7.60	-84.8	1250	13.6	105.50	2.75
GM-16D	12/27/2019	810	6.87	-49.5	242	13.1	61.70	2.11
GM-17D	12/27/2019	730	6.24	-21.7	203	13.0	3.13	1.75
GM-18D	12/27/2019	950	7.20	-73.7	682	12.9	6.76	4.61
GM-19D	12/27/2019	930	6.73	-15.5	335	13.8	6.09	6.51

---

## Joseph Guarino

**From:** zionenvironmental@gmail.com  
**Sent:** Tuesday, October 22, 2019 4:13 PM  
**To:** Joseph Guarino  
**Subject:** RE: conductivity data

»» This message has originated from an External Source. Please use proper judgment and caution when opening attachments, clicking links, or responding to this email. ««

Hi Joe,

During the June 10, 2019 sampling event, we had to calibrate the conductivity meter twice during the day. After the field parameters for the leachates at NNU-PLCRS (primary) and NNU-SLCRS (secondary), the conductivity probe failed. We switched out the probe with a used backup probe that we carry in the case. We calibrated the meter the next day (June 11th) because leachates at NNU-PLCRS (primary) and NNU-SLCRS (secondary) were the last sampling locations for the day.

Towards the end of September, the backup probe failed. At this point, we purchased a new conductivity meter instead of another probe. Maybe it was the meter that was giving us faulty readings. The December sampling event should let us know if it's the meter or the well.



Brian Nichols  
VP/CPM  
Zion Environmental, LLC  
PO Box 162  
Otisville, NY 10963

Phone: 845-649-9346  
Email: [ZionEnvironmental@Gmail.com](mailto:ZionEnvironmental@Gmail.com)

**From:** Joseph Guarino <jguarino@townofbabylon.com>  
**Sent:** Tuesday, October 22, 2019 1:51 PM  
**To:** Brian Nichols <zionenvironmental@gmail.com>  
**Subject:** conductivity data

Brian

I've been going through the field data and conductivity at wells 2-19 for December 18 and June 19 is curious when compared to historic data. A few wells are very elevated compared to historic data, most notable is the upgradient well (GM-2) with values over 3000 umhos/cm when historically we have seen values in the 200-300 umhos/cm range.

Can you look into this?

Thanks,

Joe

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# **Appendix 2**

## **Action Leakage Rate Values**

**Town of Babylon**



**D.E.C./Landfill/Recycling Center**

**Memorandum**

**Date:** January 28, 2020  
**To:** Joseph Guarino, Principal Environmental Analyst, D.E.C.  
**From:** Thomas Vetri, Deputy Commissioner, D.E.C./Landfill  
**Subject:** **ACTION LEAKAGE RATES**

Please find attached 2019 Action Leakage rates, through December, for the New Northern U, Old Northern U, and Southern Ashfill including Cell 7.

Thomas Vetri  
Deputy Commissioner

cc: John Bonavita, D.E.C./Landfill Maintenance Coordinator/Shop Steward, D.E.C./Landfill File

TV:kc

**SECONDARY LEACHATE GENERATION**    issued: 1-28-20  
**SOUTHERN ASHFILL CELL 7**  
**AREA: 5.8 ACRES**  
**2019**

**MONTHLY REPORT**

MONTH	DAYS IN MONTH	GALLONS OF LEACHATE GENERATED PER MONTH	GALLONS PER DAY	GALLONS PER ACRE PER DAY
<b>JANUARY</b>	31	342	11.03	1.90
<b>FEBRUARY</b>	28	359	12.82	2.21
<b>MARCH</b>	31	307	9.90	1.71
<b>APRIL</b>	30	1158	38.60	6.66
<b>MAY</b>	31	1020	32.90	5.67
<b>JUNE</b>	30	841	28.03	4.83
<b>JULY</b>	31	53	1.71	0.29
<b>AUGUST</b>	31	0	0.00	0.00
<b>SEPTEMBER</b>	30	2279	75.97	13.10
<b>OCTOBER</b>	31	358	11.55	1.99
<b>NOVEMBER</b>	30	914	30.47	5.25
<b>DECEMBER</b>	31	1373	44.29	7.64

Average                                    4.27

SECONDARY LEACHATE GENERATION issued: 1-28-20  
 SOUTHERN ASHFILL CELLS 1, 1A, 2, 3, 4, 5, AND 6  
 AREA: 10.62 ACRES

**2019**  
**MONTHLY REPORT**

MONTH	DAYS IN MONTH	GALLONS OF LEACHATE GENERATED PER MONTH	GALLONS PER DAY	GALLONS PER ACRE PER DAY
JANUARY	31	962	31.03	2.92
FEBRUARY	28	1085	38.75	3.65
MARCH	31	1428	46.06	4.34
APRIL	30	1419	47.30	4.45
MAY	31	1257	40.55	3.82
JUNE	30	1327	44.23	4.17
JULY	31	1124	36.26	3.41
AUGUST	31	1001	32.29	3.04
SEPTEMBER	30	1412	47.07	4.43
OCTOBER	31	1373	44.29	4.17
NOVEMBER	30	1404	46.80	4.41
DECEMBER	31	1420	45.81	4.31

Average 3.93



**SECONDARY LEACHATE GENERATION**

issued: 1-28-20

**OLD NORTHERN "U" EAST****AREA: 3.61 ACRES****2019****MONTHLY REPORT**

MONTH	DAYS IN MONTH	GALLONS OF LEACHATE GENERATED PER MONTH	GALLONS PER DAY	GALLONS PER ACRE PER DAY
JANUARY	31	33,471	1079.71	299.09
FEBRUARY	28	27,484	981.57	271.90
MARCH	31	28,758	927.68	256.97
APRIL	30	11,923	397.43	110.09
MAY	31	16,046	517.61	143.38
JUNE	30	10,767	358.90	99.42
JULY	31	9,862	318.13	88.12
AUGUST	31	8,447	272.48	75.48
SEPTEMBER	30	7,656	255.20	70.69
OCOTBER	31	6,989	225.45	62.45
NOVEMBER	30	5,823	194.10	53.77
DECEMBER	31	8,396	270.84	75.02

Average

133.87

**SECONDARY LEACHATE GENERATION**  
**OLD NORTHERN "U" WEST**  
**AREA: 3.29 ACRES**  
**2019**  
**MONTHLY REPORT**

issued: 1-28-20

MONTH	DAYS IN MONTH	GALLONS OF LEACHATE GENERATED PER MONTH	GALLONS PER DAY	GALLONS PER ACRE PER DAY
JANUARY	31	2,905	93.71	28.48
FEBRUARY	28	2,748	98.14	29.83
MARCH	31	2,906	93.74	28.49
APRIL	30	6,784	226.13	68.73
MAY	31	18,944	611.10	185.74
JUNE	30	4,580	152.67	46.40
JULY	31	6,979	225.13	68.43
AUGUST	31	5,959	192.23	58.43
SEPTEMBER	30	5,627	187.57	57.01
OCOTBER	31	3,323	107.19	32.58
NOVEMBER	30	3,463	115.43	35.09
DECEMBER	31	5,160	166.45	50.59
Average				57.48

**SECONDARY LEACHATE GENERATION** issued: 1-28-20  
**NEW NORTHERN "U"**  
**AREA: 11.25 ACRES**  
**2019**  
**MONTHLY REPORT**

MONTH	DAYS IN MONTH	GALLONS OF LEACHATE GENERATED PER MONTH	GALLONS PER DAY	GALLONS PER ACRE PER DAY
JANUARY	31	305355	9850.16	875.57
FEBRUARY	28	277991	9928.25	882.51
MARCH	31	332013	10710.10	952.01
APRIL	30	188251	6275.03	557.78
MAY	31	186289	6009.32	534.16
JUNE	30	122115	4070.50	361.82
JULY	31	21584	696.26	61.89
AUGUST	31	77927	2513.77	223.45
SEPTEMBER	30	33136	1104.53	98.18
OCTOBER	31	50536	1630.19	144.91
NOVEMBER	30	32771	1092.37	97.10
DECEMBER	31	92638	2988.32	265.63

Average 421.25

## Joseph Guarino

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**From:** Tom Vetri  
**Sent:** Monday, May 4, 2020 12:14 PM  
**To:** Joseph Guarino  
**Subject:** ALR  
**Attachments:** DOC\_20200504120325.pdf

Joe,

Cell 7 was due to a blinding sump level sensor; the pump didn't get the message to turn on. It failed in a funny way; usually they don't give any reading. It was only by visual inspection of the sump de=id we realize the issue. It was corrected. It averaged to a normal reading for the 3 months.

In my opinion, the ONU East and The NNU are directly related to rainfall. Remember, leachate always lags rainfall by a considerable delta. This varies on, I believe, things like temperature and storm duration. If we look at the rainfall in Nov/Dec 2018 and factor that in, I think it seems to correlate with leachate production and ALR's.

Let me know what you think.

Thank you

Tom

Tom

SECONDARY LEACHATE GENERATION issued: 1-28-20

NEW NORTHERN "U"

AREA: 11.25 ACRES

2019

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Average

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RAINFALL -  
SEE ONU EAST

SECONDARY LEACHATE GENERATION  
 OLD NORTHERN "U" EAST  
 AREA: 3.61 ACRES  
 2019

issued: 1-28-20

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DECEMBER	31	8,396	270.84	75.02

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RAINFALL

NOV 2018 8.27  
 DEC 2018 6.03  
 JAN 2019 5.23  
 FEB 2019 3.9  
 MAR 2019 1.77  
 APRIL 2019 6.72  
 MAY 2019 5.67  
 -----  
 JUNE 2019 4.68  
 JULY 2019 2.91  
 AUG 2019 4.56  
 SEPT 2019 0.75  
 OCT 2019 4.39  
 NOV 2019

37.79"

19.29"

SECONDARY LEACHATE GENERATION issued: 1-28-20  
 SOUTHERN ASHFILL CELL 7  
 AREA: 5.8 ACRES  
 2019  
 MONTHLY REPORT

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DECEMBER	31	1373	44.29	7.64

Average 4.27

AVG  
 4.46  
 G/P/D  
 THAT  
 MAKES  
 SENSE

THE LEVEL SENSOR  
 WAS CLEANED -  
 PUMP APPARENTLY  
 DIDN'T GO ON.  
 IF YOU DON'T GET A  
 HEAD READING YOU  
 DONT EXPECT LEACHATE  
 LEVELS TO BE HIGH -  
 AS THE SENSOR BLINDED  
 IT WORKED LESS ACCURATELY