Appendix 6-1

Baseline Water Quality Monitoring Result

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Final Water Sampling and Testing Report (For Wet Season 2016 and Dry Season 2016)

Client: Drainage Services Department

Project: Contract No. PM 02/2016 Water Quality Baseline Survey For Drainage Improvement Works in Yuen Long, Stage 1

Report No.: 0080/16/ED/0236

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1. Introduction

Fugro Technical Services Limited (FTS) has been appointed to undertake the baseline water quality monitoring work for Contract No. PM 02/2016 Water Quality Baseline Survey for Drainage Improvement Works in Yuen Long, Stage 1.

The monitoring objective is to provide baseline water quality data for the existing watercourse that is likely to be affected by the proposed drainage improvement works under Agreement No. CE 22/2013 (DS). The baseline water quality monitoring was carried out in accordance with clause 2.4 and 2.5 of the project specification. This baseline water quality monitoring report is prepared by FTS prior to the commencement of construction works in accordance to Specification Clause 2.6.

The purpose of this report is to provide baseline water quality data at wet season. This report presents the monitoring locations, period, equipment, methodology, and results of water quality measurements of the baseline monitoring programme.

The structure of this report is as follows:

Section 1: Introduction
Section 2: Water Quality Monitoring Location
Section 3: Water Quality Monitoring Methodology
Section 4: Water Quality Monitoring Results
Section 5: Conclusions

2. Monitoring Locations

Baseline water quality monitoring was conducted at 10 locations along the drainage, ponds and natural streams in Project area, whose detailed information is summarized in Table 2.1. The locations of the stations are also shown in Appendix A.

The description and water body types of proposed sampling locations are presented in Table 1.

Table 2.1 Description and water body types of sampling locations

Water Monitoring Station		Water body types
ID	Description	
HC1	A Kung Tin	stream
HC2	Sheung Che Tsuen	stream
HC3	Wang Toi Shan Chuk Hang Tsuen	pond
LFT1	Lin Fa Tei Stream	stream
LFT2	Shui Tsan Tin Stream	stream
LFT3	Lin Fa Tei Pond	pond
SSNV1	Sung Shan New Village	stream
SSNV2	Yau Cha Po Tsuen	stream
TW1	Cheung Po Point 1	stream
TW2A	Cheung Po Point 2	stream

3. Monitoring Methodology

The monitoring parameters and frequency for each monitoring station for both in-situ measurement and laboratory analysis are summarized in Table 3.1. Baseline water quality monitoring was carried out 3 times per week, for two consecutive weeks from 11 to 21 October, 2016 (19 to 31 October, 2016 for TW2A) for wet season and from 22 November to 2 December, 2016 for dry season. Detailed baseline monitoring schedule is included in Appendix B.

Table 3.1 Monitoring Parameters and Frequency for each monitoring station

Parameters	Monitoring Frequency
In-situ Measurement Temperature (in ºC), pH, Turbidity (in NTU), Dissolved Oxygen (in mg/L and %), Salinity (in ppt); [1]Time taken for the debris to be washed away	3 times per week for 2 consecutive weeks 36 hours interval was allowed between two consecutive samplings.
Laboratory Analysis Suspended Solids (SS), BOD_5, *E.coli*, COD, Ammonia-N (in mg/L), Nitrite-N (in mg/L), Nitrate (in mg/L), Total Kjeldahl Nitrogen (in mg/L), Ortho-phosphorus (in mg/L), Total Phosphorus (in mg/L), Cadmium (in µg/L), Chromium(in µg/L), Copper(in µg/L), Lead(in µg/L), Mercury(in µg/L), Nickel(in µg/L), Arsenic(in µg/L), Zinc(in µg/L), Silver(in µg/L)	

Notes:
1. Time taken for the debris to be washed away was recorded for monitoring location with water depth less than 500mm only.

Monitoring Equipment

Equipment used for in-situ measurement and water sampling during baseline water quality monitoring is summarized in Table 3.2. The equipment is in compliance with the requirements set out in the clause 2.5 of the specification. The instruments for in-situ monitoring (pH, DO and Turbidity) were calibrated by a HOKLAS-accredited laboratory before commencement of the baseline monitoring programme. Calibration certificates for the water quality monitoring equipment are attached in Appendix C.

Table 3.2 Water Quality Monitoring and Sampling Equipment

Parameter	Equipment	Model	Range	Equipment Accuracy
Temperature, Dissolved Oxygen, Salinity, pH, Turbidity	Water Quality Monitoring Device	YSI 6920V2-2-M Sonde	Temp: -5 to 50 ºC DO: 0 - 50 mg/L DO%: 0 - 500% Sal: 0 to 70 ppt pH: 0 to 14 pH units Turb: 0 – 1000 NTU	Temp: ± 0.15 ºC DO: ± 0.1 mg/L or 1% (whichever greater) for 0 – 20 mg/L; ± 15% for 20 – 50 mg/L Sal: ± 1% or 0.1 ppt (whichever greater) pH: ± 0.2 units Turb: ± 2% or 0.3 NTU (whichever greater)
		In-situ Aqua TROLL 600	Temp: -5 to 50 ºC DO: 0 - 50 mg/L DO%: 0 - 500% Sal: 0 to 350 psu (ppt) pH: 0 to 14 pH units Turb: 0 – 4000 NTU	Temp: ± 0.1 ºC DO: ± 0.1 mg/L for 0 – 8 mg/L; ± 0.2 mg/L for 8 – 20 mg/L; ± 10% for 20 – 50 mg/L Sal: resolution: 0.1 psu (ppt) pH: ± 0.1 units Turb: ± 2% or 2 NTU (whichever greater)
Water Sampling	Water Sampler	Aquatic Research Transparent PC Vertical Water Sampler 2.2L / 3L / 5L	N.A.	N.A.
Positioning	Global Positioning System (GPS)	Garmin eTrex	N.A.	± 3 m
		Garmin GPS72	N.A.	± 3 m
Water Depth	Echo Sounder	Garmin ECHO 100	0.6 to 91 m	0.1 m

Monitoring Methodology

In-situ measurements and water samples were taken at 3 water depths of the water column for each monitoring location, i.e. 1m below water surface, mid-depth and 1 m above sea bed, except where the water depth was less than 6 m in which case the mid-depth was omitted and for locations where the water depth was less than 3 m only the mid-depth was monitored.

In-Situ Measurement

Prior to each monitoring day, wet bulb calibration was performed for the DO probes. Responses of sensors and electrodes were checked with certified standard solutions before each use.

At each sampling depth, two consecutive measurements were taken for turbidity, pH, DO and temperature. Separate deployment of the monitoring instruments was conducted for the consecutive measurements. When the difference between the two measurements for DO or turbidity was higher than 25% of the value of the first reading, the reading would be discarded and further readings would be taken.

Laboratory Testing

Duplicate water samples were collected at each sampling depth for laboratory measurement of SS, BOD_5, COD, *E.coli*, Ammonia, Nitrite, Nitrate, Total Kjeldahl Nitrogen, Ortho-phosphate Phosphorus, Total Phosphorus and Metals shown in Table 3.1. Samples were stored in high density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to the laboratory on the same day of collection for analysis.

ALS Technichem (HK) Pty Ltd (HOKLAS Reg. No. 066), was appointed to be the laboratory for analysis of water samples in the baseline monitoring project. The methods adopted by the laboratories and the reporting limits are detailed in Table 3.3.

Table 3.3 Laboratory Measurement/Analysis Methods and Reporting Limits

Analysis Description	Method	Reporting limits
Suspended Solid	APHA 22ed 2540 D	0.5 mg/L
5-day Biochemical Oxygen Demand	APHA 18ed 5210 B	1 mg/L
Chemical Oxygen Demand	APHA 22ed 5220 B	2 mg/L
E.coli	DoE Section 7.8 &7.9 membrane filration with CHROMagar Liquid ECC medium	1 cfu /100 mL
Ammonia	APHA 22ed 4500-NH3N	0.025 mg/L
Nitrite	APHA 22ed 4500-NO2-B	0.002 mg/L
Nitrate	APHA 22ed 4500-NO3-E	0.002 mg/L
Total Kjeldahl Nitrogen	APHA 20ed 4500-N A&D (FIA)	0.05 mg/L
Ortho-phosphate Phosphorus	APHA 4500-PE	0.002 mg/L
Total Phosphorus	APHA 20ed 4500-P G (FIA)	0.02 mg/L
Cadmium	USEPA 6020A	1 µg/L
Chromium		1 µg/L
Copper		1 µg/L
Lead		1 µg/L
Mercury		1 µg/L
Nickel		1 µg/L
Arsenic		10 µg/L
Zinc		10 µg/L
Silver	USEPA 6010B	1 µg/L

Details of the Quality Assurance / Quality Control results for the laboratory analysis are shown in Appendix D.

4. Results and Observations

A summary of the in-situ baseline water quality monitoring results is given in Table 4.1 (wet season) and Table 4.2 (dry season). The complete record of in-situ monitoring results is provided in Appendix E. Graphical presentation of water quality at the monitoring stations is given in Appendix F.

Table 4.1 Summary of In-situ Monitoring Results for Wet Season

Monitoring Station	pH			Temperature (degree C)			DO (mg/L)			Turbidity (NTU)			Salinity (ppt)			Time taken for the debris to be wash away (s)		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
HC1	7.38	7.58	7.09	24.58	25.37	23.77	7.94	8.26	7.55	23.8	111.1	3.2	0.05	0.06	0.02	17	38	5
HC2	7.07	7.36	6.89	25.31	26.36	24.43	4.87	8.03	3.12	35.3	124.6	9.1	0.09	0.12	0.03	23	54	5
HC3	7.94	8.81	6.87	27.63	29.48	25.84	11.29	16.72	6.08	34.2	47.7	23.4	0.12	0.15	0.05	NA	NA	NA
LFT1	7.02	7.20	6.85	25.28	25.94	24.40	6.23	7.07	5.57	7.7	28.4	1.5	0.08	0.10	0.06	9	14	4
LFT2	7.12	7.47	6.92	25.17	26.13	24.32	6.05	7.37	5.20	14.9	29.5	9.0	0.06	0.11	0.01	31	52	4
LFT3	9.00	9.36	8.52	26.51	27.34	25.71	12.14	15.74	8.87	42.2	50.0	36.1	0.11	0.12	0.09	NA	NA	NA
SSNV1	7.22	7.51	6.92	26.61	27.99	24.90	5.96	7.49	4.40	8.4	23.4	2.1	0.11	0.19	0.05	20	26	7
SSNV2	6.99	7.32	6.72	26.18	27.55	24.81	5.40	7.50	3.72	8.8	33.9	1.9	0.08	0.17	0.04	25	26	24
TW1	7.01	7.59	6.79	24.27	24.69	23.48	7.98	8.22	7.59	6.4	16.3	3.2	0.04	0.05	0.03	29	44	5
TW2A	6.66	6.90	6.12	24.97	25.80	24.34	7.80	8.80	7.41	6.9	16.9	2.8	0.04	0.04	0.03	17	25	5

Note:

1. ND: Not Detected
2. NA: Not Applicable

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Table 4.2 Summary of In-situ Monitoring Results for Dry Season

Monitoring Station	pH			Temperature (degree C)			DO (mg/L)			Turbidity (NTU)			Salinity (ppt)			Time taken for the debris to be wash away (s)		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
HC1	7.02	7.24	6.61	20.03	23.35	18.62	8.69	8.91	8.14	10.8	19.9	2.3	0.04	0.06	0.00	16	28	10
HC2	6.85	7.10	6.54	20.47	23.76	18.88	6.83	7.42	5.72	13.0	36.0	4.9	0.11	0.20	0.08	21	29	11
HC3	7.18	8.01	6.75	22.17	24.61	18.96	7.66	11.00	5.16	16.8	28.5	8.8	0.14	0.16	0.12	NA	NA	NA
LFT1	6.88	7.02	6.72	20.37	23.78	19.04	7.49	8.33	6.51	6.7	16.8	2.9	0.12	0.19	0.07	14	20	10
LFT2	6.85	7.13	6.53	20.44	23.13	19.22	6.75	7.42	6.29	15.7	23.8	9.1	0.09	0.12	0.06	26	39	13
LFT3	8.94	9.60	8.48	20.93	25.39	18.90	11.63	14.27	9.55	42.8	62.1	31.0	0.10	0.11	0.05	NA	NA	NA
SSNV1	6.67	6.86	6.54	21.40	23.93	19.12	7.17	7.98	6.40	12.2	24.2	4.1	0.08	0.10	0.05	18	23	15
SSNV2	6.53	6.76	6.39	21.12	23.82	19.13	6.42	7.05	5.60	8.0	17.3	3.5	0.06	0.07	0.03	NA	NA	NA
TW1	6.70	7.12	6.52	19.49	23.38	18.00	8.96	10.05	8.15	6.3	17.9	3.1	0.04	0.04	0.02	32	44	18
TW2A	6.60	6.89	6.33	19.59	23.32	18.01	8.66	8.98	7.89	7.4	18.4	3.2	0.03	0.05	0.00	31	52	13

Note:

1. ND: Not Detected
2. NA: Not Applicable

Results of laboratory analysis of baseline water quality are presented in Table 4.3 (wet season) and Table 4.4 (dry season). The complete record of laboratory analysis results are given in Appendix E. Graphical presentation of water quality at the monitoring stations is given in Appendix F.

Table 4.3 Summary of Laboratory Analysis Results for Wet Season

Monitoring Station		HC1	HC2	HC3	LFT1	LFT2	LFT3	SSNV1	SSNV2	TW1	TW2A
SS (mg/L)	Mean	71.2	58.0	53.6	7.1	36.3	94.3	11.5	11.6	7.6	10.3
	Max	342.0	195.0	72.9	19.4	66.3	157.0	21.7	36.2	15.0	24.0
	Min	4.5	11.2	41.2	2.1	16.6	55.3	4.1	5.0	2.3	2.8
BOD_5 (mg/L)	Mean	1	48	10	2	3	14	5	2	1	2
	Max	3	149	14	3	5	18	10	4	1	8
	Min	<1	1	2	1	1	9	<1	<1	<1	<1
COD (mg/L)	Mean	8	94	64	10	14	90	16	9	7	9
	Max	28	216	91	18	20	121	28	14	17	16
	Min	2	8	27	8	8	57	3	3	2	6
E.coli (CFU /100mL)	Geo-Mean	3593	108153	2440	3763	4209	1325	19692	5005	433	2668
	Max	44000	890000	27000	20000	36000	4100	140000	230000	7800	160000
	Min	690	8600	59	78	440	71	450	160	ND	320
NH_3-N (mg/L)	Mean	0.088	1.256	3.126	0.916	2.342	0.041	12.488	2.180	0.035	0.043
	Max	0.171	2.070	5.050	1.390	6.570	0.067	30.000	10.000	0.053	0.063
	Min	0.039	0.075	0.914	0.283	0.380	<0.025	0.294	0.218	<0.025	0.028
NO_2-N (mg/L)	Mean	0.008	0.055	0.266	0.226	0.262	<0.002	0.243	0.164	0.005	0.003
	Max	0.020	0.304	0.401	0.337	0.546	<0.002	0.547	0.319	0.007	0.005
	Min	<0.002	<0.002	0.048	0.028	0.023	<0.002	0.028	0.013	<0.002	<0.002
NO_3-N (mg/L)	Mean	0.192	0.155	0.789	0.921	0.751	<0.002	0.838	0.701	0.102	0.086
	Max	0.323	0.414	1.310	1.100	0.982	<0.002	1.090	0.776	0.153	0.133
	Min	<0.002	<0.002	0.311	0.596	0.462	<0.002	0.721	0.597	0.065	0.047
TKN (mg/L)	Mean	0.37	3.81	6.40	1.28	2.91	3.50	12.96	2.55	0.18	0.36
	Max	1.06	6.72	10.30	1.67	7.47	4.89	31.00	10.60	0.46	0.67
	Min	0.17	0.70	2.07	0.77	0.94	2.90	0.42	0.44	0.08	0.13
Ortho-phosphate Phosphorus (mg/L)	Mean	0.043	0.123	0.343	0.391	0.785	0.006	1.477	0.632	0.034	0.025
	Max	0.077	0.495	0.406	0.466	1.800	0.010	2.950	1.180	0.126	0.089
	Min	0.003	0.015	0.305	0.332	0.315	0.002	0.182	0.140	0.013	0.010
Total P (mg/L)	Mean	0.09	0.49	0.85	0.49	1.08	0.28	1.71	0.75	0.06	0.05
	Max	0.14	1.08	1.02	0.58	2.14	0.37	3.32	1.36	0.19	0.15
	Min	0.04	0.13	0.56	0.43	0.41	0.24	0.22	0.18	0.03	0.02
Cadium (µg/L)	Mean	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	Mean	1	2	2	1	1	1	<1	<1	<1	<1

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Monitoring Station		HC1	HC2	HC3	LFT1	LFT2	LFT3	SSNV1	SSNV2	TW1	TW2A
(µg/L)	Max	2	6	2	1	2	3	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (µg/L)	Mean	3	4	33	6	34	30	6	21	5	4
	Max	12	7	53	27	60	86	10	50	17	10
	Min	<1	<1	<1	<1	8	9	5	4	<1	<1
Lead (µg/L)	Mean	2	3	5	3	13	12	2	3	2	2
	Max	7	8	7	8	28	32	5	7	5	6
	Min	<1	<1	<1	<1	<1	5	<1	<1	<1	<1
Mercury (µg/L)	Mean	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel (µg/L)	Mean	<1	3	3	2	1	1	2	1	1	1
	Max	<1	6	4	3	3	3	2	2	1	2
	Min	<1	<1	2	<1	<1	<1	<1	<1	<1	<1
Arsenic (µg/L)	Mean	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Max	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Min	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc (µg/L)	Mean	16	47	76	23	98	61	38	39	21	27
	Max	33	112	114	47	202	196	83	61	40	110
	Min	<10	<10	<10	<10	31	17	18	10	<10	<10
Silver (µg/L)	Mean	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Note:

1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading
2. ND: Not Detected
3. NA: Not Applicatable
4. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Table 4.4 Summary of Laboratory Analysis Results for Dry Season

Monitoring Station		HC1	HC2	HC3	LFT1	LFT2	LFT3	SSNV1	SSNV2	TW1	TW2A
SS (mg/L)	Mean	11.2	84.2	30.3	5.9	26.7	72.6	29.5	12.4	5.9	10.6
	Max	18.1	339.0	46.6	11.0	38.6	94.6	57.4	27.5	15.3	30.6
	Min	2.8	6.4	14.3	1.6	15.6	58.4	7.4	6.4	1.4	3.9
BOD_5 (mg/L)	Mean	1	61	7	4	6	20	9	4	1	<1
	Max	3	255	12	8	13	24	19	10	2	<1
	Min	<1	4	5	2	4	14	3	2	<1	<1
COD (mg/L)	Mean	6	183	39	14	23	87	21	15	5	5
	Max	10	649	60	20	35	99	48	34	9	10
	Min	<2	18	29	9	14	77	9	9	3	<2
E.coli (CFU /100mL)	Geo-Mean	10261	242809	1368	42816	22641	3004	51746	19174	1490	1677
	Max	30000	910000	7000	250000	85000	6400	200000	220000	3100	3000
	Min	2900	24000	380	3100	7700	1600	8900	1500	820	1100
NH_3-N (mg/L)	Mean	0.137	1.531	7.679	3.538	4.593	0.055	2.513	1.738	0.050	0.046
	Max	0.175	2.130	9.280	8.650	6.320	0.086	5.980	2.750	0.101	0.056
	Min	0.111	0.993	7.040	1.640	2.200	0.037	1.380	1.340	0.031	0.037
NO_2-N (mg/L)	Mean	0.017	0.057	0.114	0.191	0.093	0.002	0.190	0.156	0.003	0.003
	Max	0.023	0.115	0.174	0.259	0.119	0.002	0.248	0.219	0.006	0.007
	Min	0.006	<0.002	0.079	0.074	0.058	<0.002	0.152	0.130	<0.002	<0.002
NO_3-N (mg/L)	Mean	0.331	0.389	0.476	0.825	0.384	0.003	0.971	0.769	0.061	0.053
	Max	0.420	0.616	0.782	1.030	0.543	0.007	1.130	1.120	0.078	0.080
	Min	0.240	<0.002	0.272	0.679	0.252	<0.002	0.820	0.536	0.042	0.033
TKN (mg/L)	Mean	0.45	15.04	9.96	4.55	6.35	3.55	4.29	2.80	0.18	0.17
	Max	0.73	65.70	11.70	8.69	8.73	4.83	7.78	4.38	0.34	0.26
	Min	0.26	1.67	8.10	2.88	3.44	2.98	2.51	1.79	0.10	0.09
Ortho-phosphate Phosphorus (mg/L)	Mean	0.052	0.371	0.531	0.383	1.027	0.004	1.108	0.888	0.010	0.010
	Max	0.067	1.220	0.708	0.656	1.350	0.009	1.790	1.430	0.017	0.015
	Min	0.042	0.016	0.280	0.229	0.781	<0.002	0.560	0.596	0.006	0.007
Total P (mg/L)	Mean	0.10	2.10	0.89	0.52	1.47	0.24	1.79	1.18	0.03	0.04
	Max	0.13	8.97	0.95	0.85	2.04	0.31	3.24	2.16	0.06	0.06
	Min	0.08	0.21	0.81	0.35	1.08	0.19	0.72	0.76	0.02	0.02
Cadium (µg/L)	Mean	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium (µg/L)	Mean	1	1	1	<1	<1	<1	1	1	<1	<1
	Max	1	2	2	<1	<1	<1	2	1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (µg/L)	Mean	4	8	6	4	52	7	22	12	2	2
	Max	8	26	10	8	85	9	49	30	6	4

Monitoring Station		HC1	HC2	HC3	LFT1	LFT2	LFT3	SSNV1	SSNV2	TW1	TW2A
	Min	<1	<1	2	2	28	6	16	5	<1	<1
Lead (µg/L)	Mean	2	2	4	2	7	5	2	3	2	2
	Max	4	8	7	3	11	8	4	5	4	4
	Min	<1	<1	2	<1	2	3	1	1	<1	<1
Mercury (µg/L)	Mean	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel (µg/L)	Mean	1	5	2	1	2	1	1	1	1	1
	Max	1	14	3	2	2	2	2	2	4	1
	Min	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic (µg/L)	Mean	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Max	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Min	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc (µg/L)	Mean	24	45	56	78	143	39	179	120	32	17
	Max	56	112	132	549	197	64	389	274	138	27
	Min	<10	17	28	19	77	21	51	46	<10	<10
Silver (µg/L)	Mean	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Note:

1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading
2. ND: Not Detected
3. NA: Not Applicatable
4. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Observations

No major activities were observed during the period of baseline monitoring, the weather condition during the baseline monitoring is provided in Appendix G.

Hotspot

Both wet season and dry season, relative high level of BOD_5 and COD was result in HC2. Several effluent discharge points at the upstream of stream and identifiable odour from stream were found and may result the high level of BOD_5 and COD. Photo of upstream of Hotspot is shown in Appendix H.

5. Conclusion

This baseline monitoring report presents baseline monitoring results for water quality at ten monitoring locations. All laboratory results satisfied the QA/QC requirements and all monitoring equipment is properly calibrated and with valid calibration certificates.

No major activities were observed during the baseline monitoring. Water quality monitoring results are, therefore, representative of the baseline condition of wet season for the Project.

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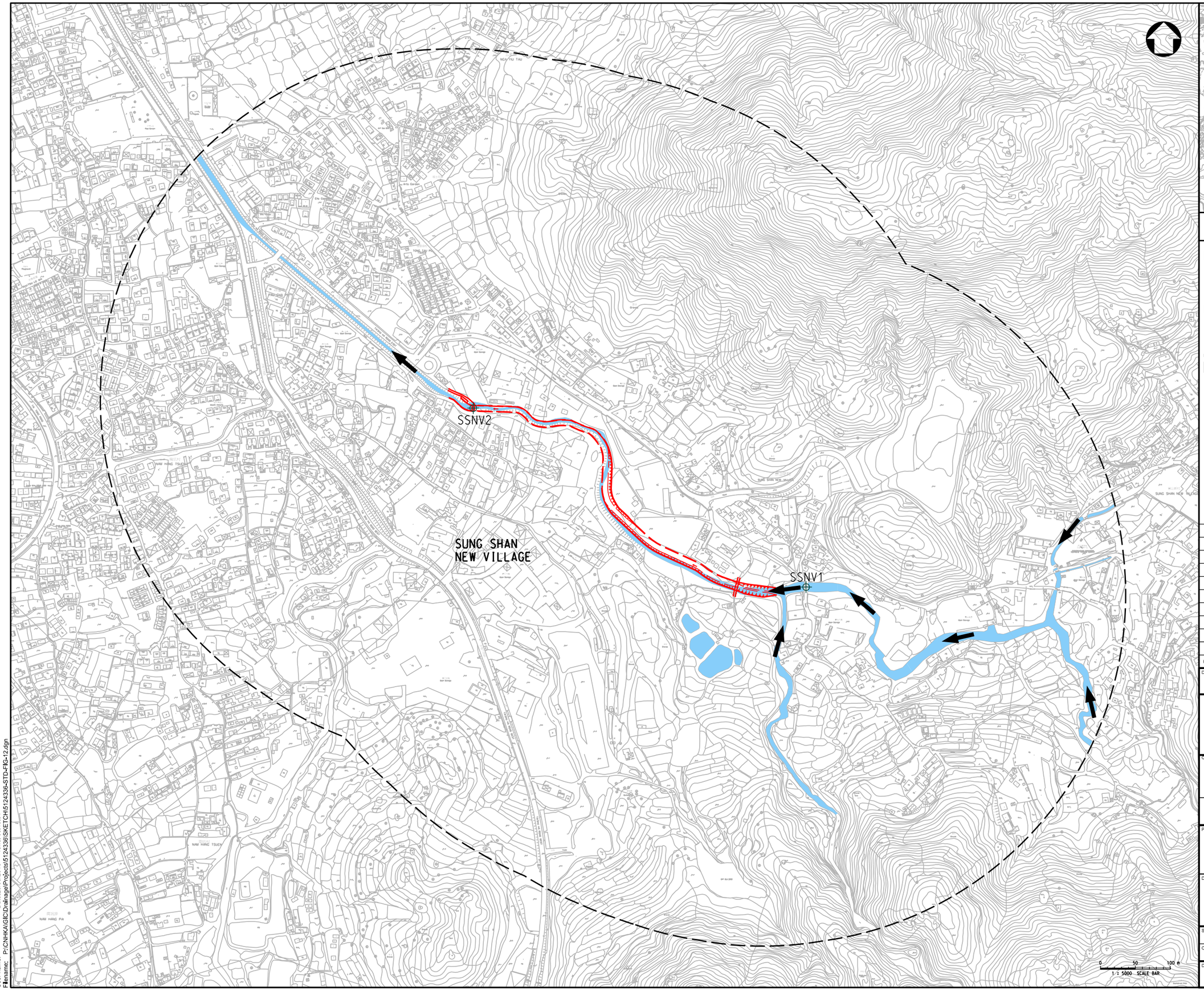
Appendix A

Location of Water Monitoring Locations



KEY PLAN
N.T.S.

NOTES:

1. FOR KEY PLAN REFER TO FIGURE 1.1.

LEGEND:

- PROPOSED DRAINAGE WORKS
- SSNV1 — PROPOSED WATER MONITORING POINT
- 500m ASSESSMENT AREA FROM PROPOSED DRAINAGE WORKS
- DIRECTION OF FLOW
- EXISTING STREAM / POND

Rev.	Date	Description	By	Chk'd	App'd
-	05/16	FIRST ISSUE	WSL	RWKC	JEC

Drawing Status: Suitability

ATKINS

Client
渠務署
Drainage Services Department
工程管理部
Project Management Division

Project Title
DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION, DESIGN AND CONSTRUCTION CE 22/2013 (DS)

Drawing Title
LAYOUT AT SUNG SHAN NEW VILLAGE

Scale	Designed	Drawn	Checked	Authorised
1 : 5000	WSL	AC	RWKC	JEC
Original Size	Date	Date	Date	Date
A3	MAY 2016	MAY 2016	MAY 2016	MAY 2016

Drawing Number: FIGURE 1.2
Revision: -

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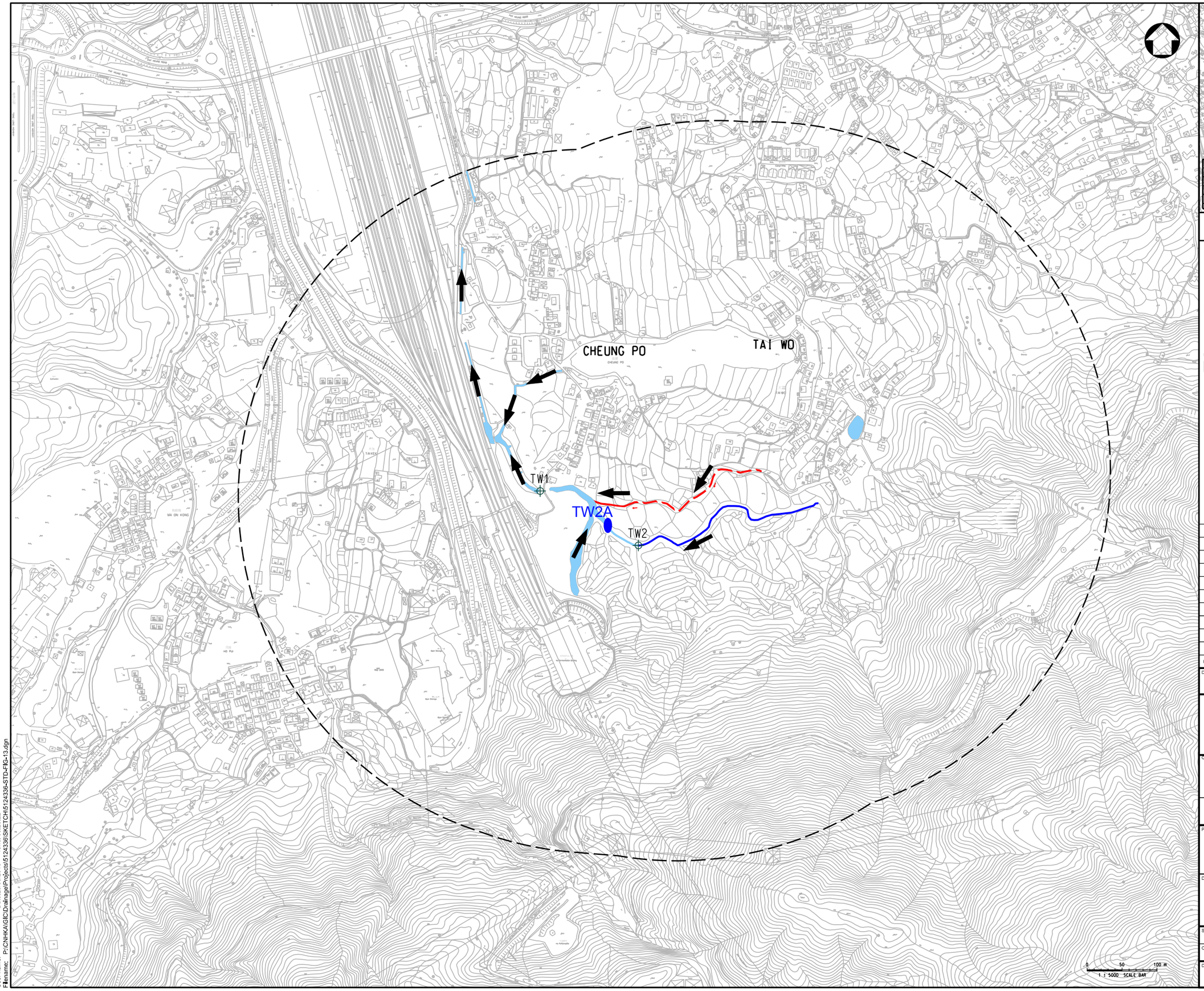

KEY PLAN
N.T.S.

NOTES:

1. FOR KEY PLAN REFER TO FIGURE 1.1.

LEGEND:

- PROPOSED DRAINAGE WORKS
- TW1 — PROPOSED WATER MONITORING POINT
- 500m ASSESSMENT AREA FROM PROPOSED DRAINAGE WORKS
- DIRECTION OF FLOW
- EXISTING STREAM / POND
- CHEUNG PO ECOLOGICAL IMPORTANT STREAM

Rev.	Date	Description	By	Chk'd	App'd
-	05/16	FIRST ISSUE	WSL	RWKC	JEC

Drawing Status: Suitability

ATKINS

Client: 渠務署 Drainage Services Department
工程管理部 Project Management Division

Project Title: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION, DESIGN AND CONSTRUCTION CE 22/2013 (DS)

Drawing Title: LAYOUT AT TAI WO

Scale	Designed	Drawn	Checked	Authorised
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Original Size: A3	Date: MAY 2016	Date: MAY 2016	Date: MAY 2016	Date: MAY 2016

Drawing Number: FIGURE 1.3
Revision: -

User name: chei8306 Date:25/05/2016 Time: 09:28:22
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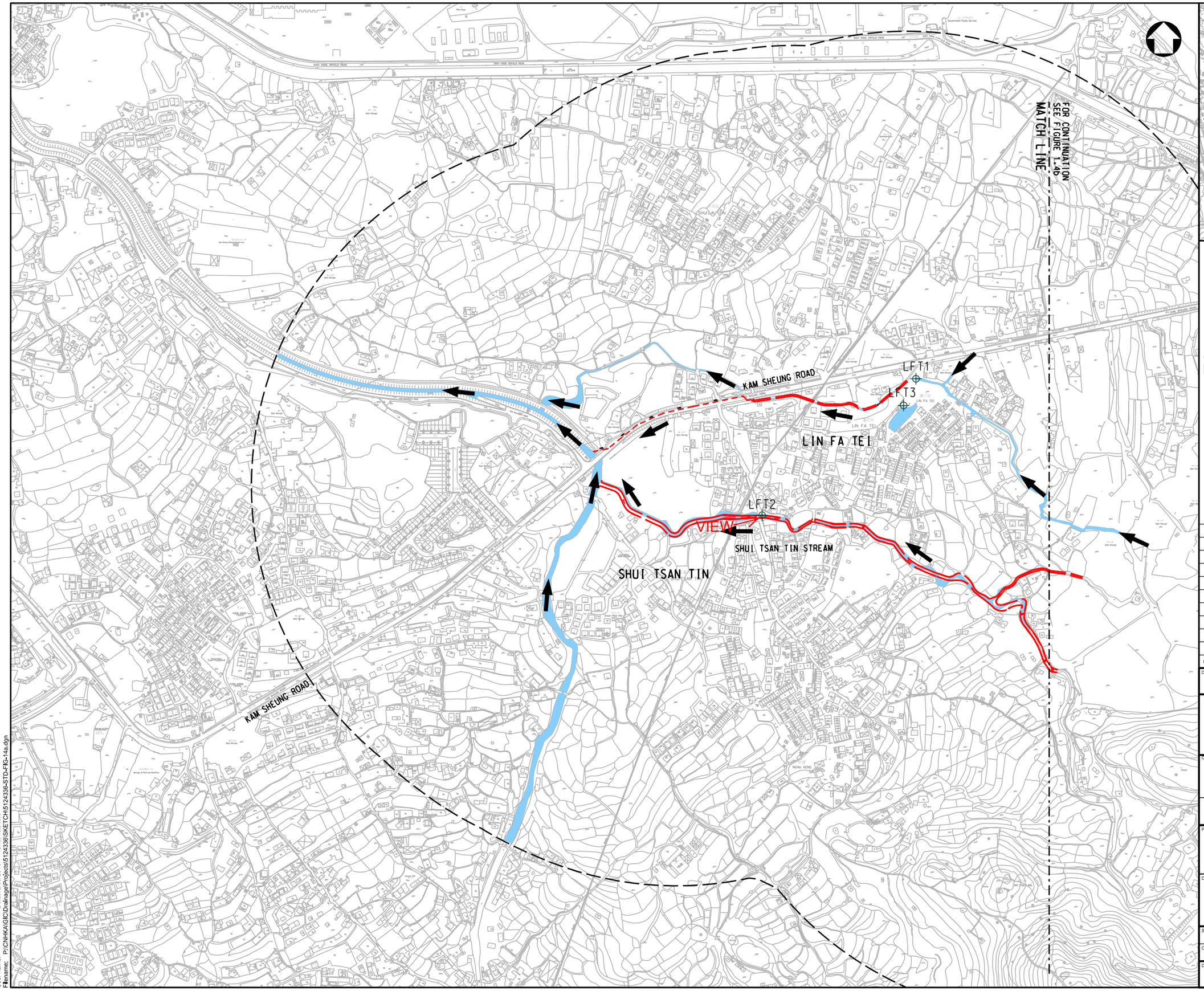

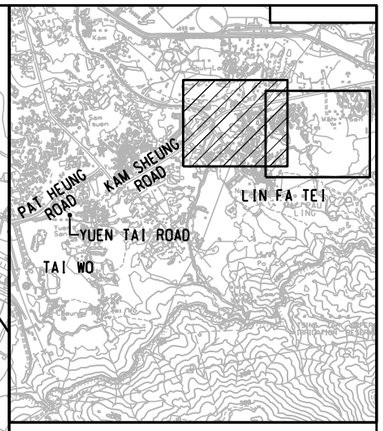

NOTES:

1. FOR KEY PLAN REFER TO FIGURE 1.1.

LEGEND:

- PROPOSED DRAINAGE WORKS
- LFT1 — PROPOSED WATER MONITORING POINT
- 500m ASSESSMENT AREA FROM PROPOSED DRAINAGE WORKS
- DIRECTION OF FLOW
- EXISTING STREAM / POND

Rev.	Date	Description	By	Chk'd	App'd
-	05/16	FIRST ISSUE	WSL	RWKC	JEC

Drawing Status: Suitability

ATKINS

Client: 渠務署 Drainage Services Department

工程管理部 Project Management Division

Project Title: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION, DESIGN AND CONSTRUCTION CE 22/2013 (DS)

Drawing Title: LAYOUT AT LIN FA TEI (SHEET 1 OF 2)

Scale	Designed	Drawn	Checked	Authorised
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Drawing Number: FIGURE 1.4a — Revision: -

User name: chenl8306 Date:12/05/2016 Time: 10:56:18
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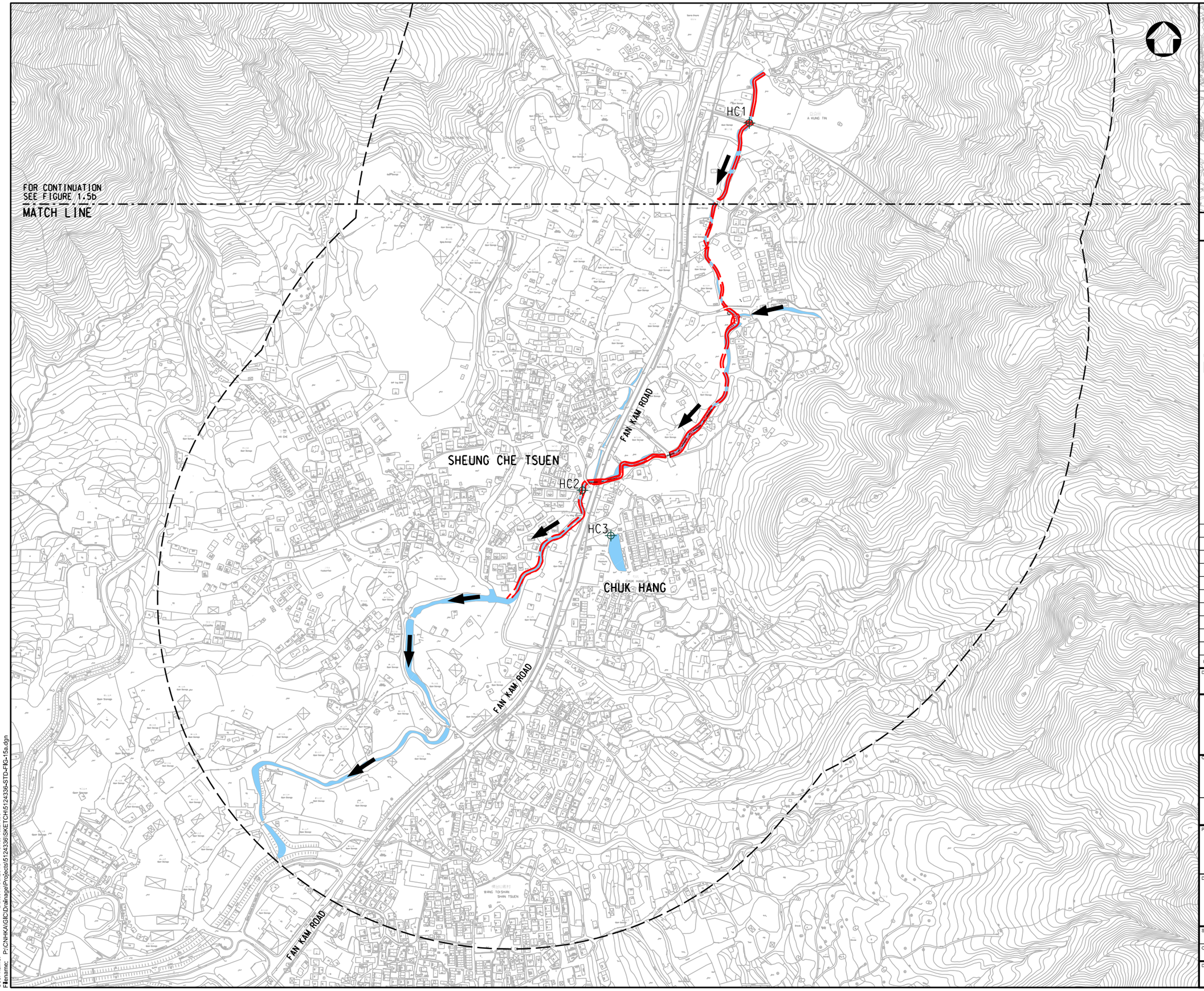

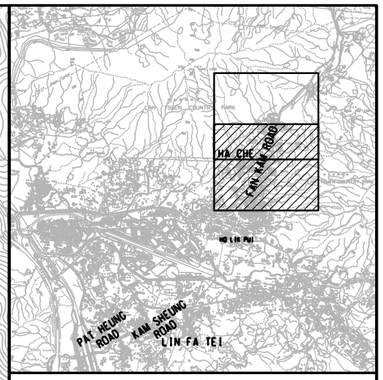

KEY PLAN
N.T.S.

NOTES:

1. FOR KEY PLAN REFER TO FIGURE 1.1.

LEGEND:

- PROPOSED DRAINAGE WORKS
- HC1 — PROPOSED WATER MONITORING POINT
- 500m ASSESSMENT AREA FROM PROPOSED DRAINAGE WORKS
- DIRECTION OF FLOW
- EXISTING STREAM / POND

Rev.	Date	Description	By	Chk'd	App'd
-	05/16	FIRST ISUUE	WSL	RWKC	JEC

Drawing Status: Suitable for

ATKINS

Client
渠務署
Drainage Services Department
工程管理部
Project Management Division

Project Title
DRAINAGE IMPROVEMENT WORKS
IN YUEN LONG STAGE 1 - INVESTIGATION,
DESIGN AND CONSTRUCTION
CE 22/2013 (DS)

Drawing Title
LAYOUT AT HA CHE
(SHEET 1 OF 2)

Scale	Designed	Drawn	Checked	Authorised
1 : 5000	WSL	AC	RWKC	JEC
Original Size: A3	Date: MAY 2016	Date: MAY 2016	Date: MAY 2016	Date: MAY 2016

Drawing Number: FIGURE 1.5a
Revision: -

User name: cheu8306 Date:11/05/2016 Time: 16:27:33
Filename: P:\CNHKA\GIC\Drainage\Projects\5124336\SKETCH\5124336-STD-FIG-15a.dgn

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Appendix B

Baseline Water Quality Monitoring Schedule

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BASELINE WATER QUALITY MONITORING SCHEDULE (Wet Season)

Contract No. PM 02/2016 Water Quality Baseline Survey For Drainage Improvement Works in Yuen Long, Stage 1

October 2016

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11 W	12	13 W	14	15 W
16	17 W	18	19 W & W'	20	21 W & W'	22
23	24 W'	25	26 W'	27	28 W'	29
30	31 W'					

Remarks

- W – water sampling at HC1, HC2, HC3, LFT1, LFT2, LFT3, SSNV1, SSNV2, TW1 for 3 times per week, for two consecutive weeks.
- W' – water sampling at TW2A for 3 times per week, for two consecutive weeks.

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BASELINE WATER QUALITY MONITORING SCHEDULE (Dry Season)

Contract No. PM 02/2016 Water Quality Baseline Survey For Drainage Improvement Works in Yuen Long, Stage 1

November - December 2016

SUN	MON	TUE	WED	THU	FRI	SAT
		1 November	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22 W	23	24 W	25	26 W
27	28 W	29	30 W	1 December	2 W	3

Remarks

- W – water sampling at HC1, HC2, HC3, LFT1, LFT2, LFT3, SSNV1, SSNV2, TW1 and TW2A for 3 times per week, for two consecutive weeks.

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Appendix C

Calibration Certificates of Equipment

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Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.materialab.com .hk

MateriaLab

Report No. : 142626WA161616(2)

Report on Calibration of YSI 69201V2-M Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	MateriaLab Consultants Limited
Client's address	:	Rm. 23, 25, 7/F, Profit Industrial Building, No. 1-15, Kwai Fung Crescent, Kwai Chung, N.T.
Project	:	CV/2013/04 – Providing Sufficient Water Depth for Kwai Tsing Container Basin and its Approach Channel
Sample description	:	One YSI 69201V2-M Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 15A104748
Test required	:	Calibration of the YSI 69201V2-M Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA161616/3
Date sample received	:	07/10/2016
Date of calibration	:	08/10/2016
Next calibration date	:	07/01/2017
Test method used	:	In-house comparison method

Note : This report refers only to the sample(s) tested.

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E-mail : matlab@fugro.com
Website : www.materialab.com.hk

MateriaLab

Report No. : 142626WA161616(2)

Results :

A. pH calibration

pH reading at 21°C for Q.C. solution(6.86) and at 21°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.18	0.00
6.86	6.91	+0.05

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	10.18	+0.18	± 0.5
20	20.23	+0.23	± 1.0
30	30.16	+0.16	± 1.5
40	40.17	+0.17	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.25	8.40
2	8.45	8.57
3	8.49	8.67
Average	8.40	8.55

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.2 mg/L

Supervised by : Y. M. Chung

Certified by : _____
Approved Signatory : HO Kin Man, John
Manager – Chemistry Department

Date : 31/10/2016

Note : This report refers only to the sample(s) tested.

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Website : www.materialab.com .hk

MateriaLab

Report No. : 142626WA161616(2)

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
21.60	21.25

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-0.3	-0.30	± 0.5
4	4.0	0.00	± 0.6
8	7.9	-0.10	± 0.8
40	40.5	+0.50	± 3.0
80	79.6	-0.40	± 4.0

Supervised by : Y. M. Chung

Certified by :
Approved Signatory : HO Kin Man, John
Manager – Chemistry Department

Date : 31/10/2016

** End of Report **

Note : This report refers only to the sample(s) tested.

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Appendix D

Quality Assurance / Quality Control Results

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MaterialLab

Wet Season

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1641035
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 11-OCT-2016
Order number	: 0080/16			Issue Date	: 26-OCT-2016
C-O-C number	: ----			No. of samples received	: 18
Site	: ----			No. of samples analysed	: 18

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 11-OCT-2016 to 26-OCT-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1641035

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 18:40. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID	HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]
					HK1641035-001	HK1641035-002	HK1641035-003	HK1641035-004	HK1641035-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**4.9**	**4.5**	**48.0**	**45.9**	**72.9**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.065**	**0.049**	**1.73**	**1.14**	**2.93**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.009**	**0.008**	<0.002	<0.002	**0.398**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.199**	**0.188**	<0.002	<0.002	**1.31**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**0.21**	**0.17**	**3.66**	**3.60**	**7.54**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.07**	**0.07**	**0.51**	**0.48**	**1.02**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.048**	**0.048**	**0.060**	**0.077**	**0.318**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**3**	**3**	**76**	**69**	**89**
EP030: Biochemical Oxygen Demand	----	1	mg/L		<1	<1	**37**	**29**	**13**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		**1**	<1	**5**	**4**	<1
EG020: Copper	7440-50-8	1	µg/L		<1	<1	<1	<1	<1
EG020: Lead	7439-92-1	1	µg/L		<1	<1	**6**	**4**	**5**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	**1**	**6**	**5**	**4**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		<10	**12**	**112**	**106**	**71**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**2600**	**3100**	**180000**	**230000**	**3500**

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641035-006**	**HK1641035-007**	**HK1641035-008**	**HK1641035-009**	**HK1641035-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**70.4**	**4.0**	**2.1**	**39.1**	**38.8**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**2.96**	**1.25**	**1.26**	**2.80**	**2.82**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.401**	**0.308**	**0.309**	**0.360**	**0.361**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**1.29**	**1.10**	**1.07**	**0.647**	**0.735**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**7.44**	**1.29**	**1.51**	**3.53**	**3.60**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**1.02**	**0.43**	**0.44**	**1.41**	**1.44**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.323**	**0.358**	**0.362**	**0.940**	**0.937**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**91**	**8**	**10**	**16**	**16**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**13**	**2**	**1**	**2**	**2**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		<1	<1	<1	**60**	**59**
EG020: Lead	7439-92-1	1	µg/L		**5**	**2**	**6**	**12**	**12**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**4**	**1**	**2**	**2**	**3**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**84**	**17**	**20**	**153**	**202**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**3900**	**6800**	**7200**	**4600**	**5100**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641035-011**	**HK1641035-012**	**HK1641035-013**	**HK1641035-014**	**HK1641035-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**150**	**157**	**12.5**	**14.0**	**5.7**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.040**	<0.025	**30.0**	**30.0**	**9.68**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.318**	**0.321**	**0.240**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.721**	**0.727**	**0.702**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.89**	**3.92**	**30.6**	**31.0**	**10.6**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.34**	**0.37**	**3.32**	**3.30**	**1.36**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.010**	**0.009**	**2.94**	**2.95**	**1.18**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**121**	**112**	**28**	**28**	**13**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**13**	**16**	**9**	**9**	**4**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		**3**	**2**	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**79**	**86**	**8**	**7**	**22**
EG020: Lead	7439-92-1	1	µg/L		**32**	**32**	**2**	**2**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	**3**	**2**	**2**	**2**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**196**	**176**	**44**	**38**	**48**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**2100**	**1900**	**33000**	**40000**	**190000**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**		
				Client sampling date / time	[11-OCT-2016]	[11-OCT-2016]	[11-OCT-2016]		
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641035-016**	**HK1641035-017**	**HK1641035-018**		
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**5.9**	**9.1**	**10.7**		
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**10.0**	<0.025	<0.025		
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.240**	**0.007**	**0.007**		
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.695**	**0.077**	**0.076**		
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**10.6**	**0.08**	**0.15**		
EK067P: Total Phosphorus as P	----	0.02	mg/L		**1.35**	**0.03**	**0.05**		
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**1.18**	**0.020**	**0.019**		
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**12**	**5**	**4**		
EP030: Biochemical Oxygen Demand	----	1	mg/L		**3**	<1	<1		
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10		
EG020: Cadmium	7440-43-9	1	µg/L		<1	**1**	<1		
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1		
EG020: Copper	7440-50-8	1	µg/L		**20**	<1	<1		
EG020: Lead	7439-92-1	1	µg/L		**1**	**5**	**4**		
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1		
EG020: Nickel	7440-02-0	1	µg/L		**1**	<1	<1		
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1		
EG020: Zinc	7440-66-6	10	µg/L		**53**	**13**	<10		
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**230000**	**860**	**920**		

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4327661)								
HK1641035-001	HC1 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	4.9	5.1	4.0
HK1641035-011	LFT3 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	150	147	2.2
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328073)								
HK1641008-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.1	mg/L	996	1100	9.8
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328074)								
HK1641035-010	LFT2 - M - DUP	**EK055K: Ammonia as N**	7664-41-7	0.025	mg/L	2.82	2.87	1.8
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328851)								
HK1640139-015	Anonymous	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.73	0.74	1.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328854)								
HK1641035-007	LFT1 - M	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	0.43	0.46	6.7
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4329104)								
HK1641035-009	LFT2 - M	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	0.360	0.361	0.3
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330037)								
HK1641035-018	TW1 - M - DUP	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.002	mg/L	0.019	0.017	11.1
EG: Metals and Major Cations (QC Lot: 4328931)								
HK1641035-011	LFT3 - M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	3	3	0.0
		EG020: Copper	7440-50-8	1	µg/L	79	79	0.0
		EG020: Lead	7439-92-1	1	µg/L	32	30	4.4
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	2	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	196	164	17.6
HK1641142-001	Anonymous	**EG020: Cadmium**	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	2	3	0.0
		EG020: Silver	7440-22-4	1	µg/L	2	1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
EP: Aggregate Organics (QC Lot: 4332415)								
HK1640940-063	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	24	25	0.0
EP: Aggregate Organics (QC Lot: 4334093)								
HK1641035-015	SSNV2 - M	**EP026: Chemical Oxygen Demand**	----	2	mg/L	13	13	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4327661)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	98.5	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328073)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	105	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328074)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.3	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328851)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.5	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328854)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.3	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4329104)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	106	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330037)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.7	----	96	106	----	----
EG: Metals and Major Cations (QC Lot: 4328931)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	84.8	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	91.2	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	102	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	88.6	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	94.8	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	85.5	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	89.3	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	87.5	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	101	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4327820)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	108	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4327822)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	103	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4332415)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	91.5	----	85	107	----	----
				----	200 mg/L	99.9	----	91	105	----	----
EP: Aggregate Organics (QC Lot: 4334093)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	91.5	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328073)										
HK1641008-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	500 mg/L	122	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328074)										
HK1641035-010	LFT2 - M - DUP	**EK055K: Ammonia as N**	7664-41-7	5 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328851)										
HK1640139-015	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	94.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4328854)										
HK1641035-007	LFT1 - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4329104)										
HK1641035-009	LFT2 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	98.2	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330037)										
HK1641035-018	TW1 - M - DUP	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	88.4	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4328931)										
HK1641140-001	Anonymous	**EG020: Arsenic**	7440-38-2	100 µg/L	88.3	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	89.6	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	97.7	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	91.7	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	93.0	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	89.9	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	92.0	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	76.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	95.4	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4332415)										
HK1640940-053	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	87.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4334093)										
HK1641035-007	LFT1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	98.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1641372
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Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 13-OCT-2016
Order number	: 0080/16			Issue Date	: 27-OCT-2016
C-O-C number	: ----			No. of samples received	: 18
Site	: ----			No. of samples analysed	: 18

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 13-OCT-2016 to 27-OCT-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1641372

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 15:05. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]
				HK1641372-001	HK1641372-002	HK1641372-003	HK1641372-004	HK1641372-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**9.9**	**9.6**	**30.6**	**29.7**	**57.9**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.108**	**0.125**	**2.04**	**2.07**	**4.98**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	**0.009**	**0.007**	<0.002	<0.002	**0.308**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.216**	**0.219**	<0.002	<0.002	**0.724**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**0.26**	**0.27**	**6.68**	**6.04**	**10.3**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.09**	**0.09**	**0.59**	**0.60**	**0.97**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.052**	**0.050**	**0.016**	**0.015**	**0.357**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**8**	**7**	**111**	**105**	**75**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**1**	**1**	**76**	**73**	**13**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	**3**	**3**	**5**	**6**	**36**
EG020: Lead	7439-92-1	1	µg/L	**1**	**2**	<1	<1	**4**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	**3**	**3**	**2**
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	**14**	**13**	**29**	**27**	**78**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**2100**	**2400**	**870000**	**760000**	**3500**

Sub-Matrix: **WATER**			*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
			Client sampling date / time	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*	**HK1641372-006**	**HK1641372-007**	**HK1641372-008**	**HK1641372-009**	**HK1641372-010**
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**61.6**	**3.1**	**4.3**	**20.3**	**17.6**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**5.05**	**0.881**	**0.817**	**2.16**	**2.14**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	**0.311**	**0.293**	**0.299**	**0.345**	**0.342**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.731**	**1.04**	**1.06**	**0.686**	**0.689**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**9.26**	**1.06**	**1.16**	**2.59**	**2.69**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.98**	**0.43**	**0.45**	**0.94**	**0.92**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.354**	**0.332**	**0.334**	**0.721**	**0.723**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**77**	**9**	**8**	**13**	**16**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**12**	**3**	**3**	**2**	**3**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	**41**	**2**	**2**	**46**	**47**
EG020: Lead	7439-92-1	1	µg/L	**5**	<1	<1	**8**	**8**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	**3**	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	**74**	**11**	<10	**92**	**110**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**4200**	**8800**	**8600**	**6100**	**5700**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]	[13-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641372-011**	**HK1641372-012**	**HK1641372-013**	**HK1641372-014**	**HK1641372-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**78.2**	**75.7**	**4.8**	**4.1**	**5.3**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.067**	**0.057**	**0.988**	**0.982**	**0.848**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.281**	**0.275**	**0.214**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**1.08**	**1.09**	**0.776**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.90**	**3.04**	**1.13**	**1.22**	**1.19**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.24**	**0.26**	**0.78**	**0.76**	**0.66**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.006**	**0.007**	**0.670**	**0.664**	**0.536**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**83**	**91**	**6**	**6**	**7**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**12**	**13**	**2**	**2**	**2**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**34**	**33**	**5**	**3**	**43**
EG020: Lead	7439-92-1	1	µg/L		**5**	**5**	<1	<1	<1
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**44**	**40**	**20**	**21**	**33**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**1100**	**1400**	**18000**	**21000**	**330**

Sub-Matrix: **WATER**

Compound	*CAS Number*	*LOR*	*Unit*	*Client sample ID* / *Client sampling date / time*	**SSNV2 - M - DUP** [13-OCT-2016]	**TW1 - M** [13-OCT-2016]	**TW1 - M - DUP** [13-OCT-2016]		
					HK1641372-016	**HK1641372-017**	**HK1641372-018**		
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**5.5**	**4.0**	**6.0**		
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.827**	<0.025	**0.026**		
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.214**	**0.007**	**0.005**		
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.771**	**0.088**	**0.092**		
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**1.18**	**0.08**	**0.14**		
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.64**	**0.03**	**0.04**		
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.537**	**0.013**	**0.013**		
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**7**	**2**	**3**		
EP030: Biochemical Oxygen Demand	----	1	mg/L		**2**	<1	<1		
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10		
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1		
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1		
EG020: Copper	7440-50-8	1	µg/L		**50**	**10**	**9**		
EG020: Lead	7439-92-1	1	µg/L		<1	**1**	<1		
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1		
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1		
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1		
EG020: Zinc	7440-66-6	10	µg/L		**28**	**16**	**15**		
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**410**	**NOT DETECTED**	**NOT DETECTED**		

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4330566)								
HK1641372-009	LFT2 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	20.3	21.2	4.7
HK1641372-011	LFT3 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	78.2	73.4	6.3
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330036)								
HK1641372-001	HC1 - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.009	0.010	10.5
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330038)								
HK1641201-003	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.02	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330039)								
HK1641372-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.052	0.051	1.9
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330057)								
HK1641242-001	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	23.4	22.7	2.8
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330058)								
HK1641372-011	LFT3 - M	EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.067	0.066	1.5
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334700)								
HK1640144-010	Anonymous	EK067P: Total Phosphorus as P	----	0.01	mg/L	0.06	0.06	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334702)								
HK1641372-014	SSNV1 - M - DUP	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.76	0.76	0.0
EG: Metals and Major Cations (QC Lot: 4330544)								
HK1641372-002	HC1 - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	3	2	0.0
		EG020: Lead	7439-92-1	1	µg/L	2	2	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	13	15	13.5
HK1641372-011	LFT3 - M	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	34	36	7.9
		EG020: Lead	7439-92-1	1	µg/L	5	5	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	44	40	10.6
EP: Aggregate Organics (QC Lot: 4337886)								
HK1641372-010	LFT2 - M - DUP	EP026: Chemical Oxygen Demand	----	2	mg/L	16	16	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4330566)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	110	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330036)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	102	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330038)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.3	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330039)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330057)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.1	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330058)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.9	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334700)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	99.5	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334702)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	99.8	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4330544)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	85.5	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	91.0	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	93.1	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	87.8	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	90.9	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	89.0	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	86.8	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	79.7	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	92.9	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4330064)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	107	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4330065)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	110	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4337886)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	92.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330036)										
HK1641372-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330038)										
HK1641201-003	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	92.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330039)										
HK1641372-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330057)										
HK1641242-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	50 mg/L	93.8	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4330058)										
HK1641372-011	LFT3 - M	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	91.2	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334700)										
HK1640144-010	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	88.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334702)										
HK1641372-014	SSNV1 - M - DUP	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	94.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4330544)										
HK1641372-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	83.1	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	88.1	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	91.6	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	84.1	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	89.9	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	84.8	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	85.4	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	84.6	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	81.3	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4337886)										
HK1641372-001	HC1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	91.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1641853
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Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 17-OCT-2016
Order number	: 0080/16			Issue Date	: 31-OCT-2016
C-O-C number	: ----			No. of samples received	: 18
Site	: ----			No. of samples analysed	: 18

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	General Manager	Inorganics
Ng Sin Kou, May	Assistant Laboratory Manager	Microbiology

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 17-OCT-2016 to 31-OCT-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1641853

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 09:00. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]
				HK1641853-001	HK1641853-002	HK1641853-003	HK1641853-004	HK1641853-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**54.4**	**50.7**	**43.4**	**46.4**	**51.0**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.171**	**0.168**	**1.50**	**1.48**	**4.21**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	**0.018**	**0.020**	<0.002	<0.002	**0.401**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.323**	**0.315**	**0.010**	**0.007**	**0.885**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**0.34**	**0.38**	**6.72**	**6.10**	**7.28**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.11**	**0.13**	**1.08**	**1.02**	**0.92**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.077**	**0.074**	**0.495**	**0.321**	**0.331**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**2**	**5**	**216**	**212**	**81**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**1**	**3**	**149**	**132**	**12**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	<1	<1	**5**	**5**	**49**
EG020: Lead	7439-92-1	1	µg/L	<1	<1	<1	<1	**6**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	**4**	**4**	**4**
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	<10	<10	**58**	**50**	**81**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**860**	**690**	**890000**	**820000**	**59**

Sub-Matrix: **WATER**			*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
			Client sampling date / time	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*	**HK1641853-006**	**HK1641853-007**	**HK1641853-008**	**HK1641853-009**	**HK1641853-010**
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**46.2**	**4.5**	**4.6**	**39.1**	**41.8**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**3.90**	**1.39**	**1.22**	**1.44**	**1.51**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	**0.400**	**0.337**	**0.336**	**0.546**	**0.542**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.832**	**0.894**	**0.890**	**0.982**	**0.974**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**7.38**	**1.67**	**1.35**	**1.74**	**2.04**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.90**	**0.49**	**0.48**	**0.96**	**1.05**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.348**	**0.378**	**0.382**	**0.601**	**0.638**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**77**	**8**	**8**	**13**	**13**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**13**	**2**	**2**	**4**	**4**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	**46**	**2**	**2**	**49**	**57**
EG020: Lead	7439-92-1	1	µg/L	**6**	<1	<1	**12**	**16**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	**4**	**3**	**2**	**1**	**1**
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	**79**	**23**	**24**	**111**	**132**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**61**	**78**	**89**	**1600**	**2600**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]	[15-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641853-011**	**HK1641853-012**	**HK1641853-013**	**HK1641853-014**	**HK1641853-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**128**	**132**	**16.4**	**16.1**	**7.6**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.027**	**0.026**	**22.1**	**21.8**	**0.979**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.540**	**0.547**	**0.314**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.869**	**0.859**	**0.694**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.48**	**3.38**	**22.1**	**22.4**	**1.15**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.32**	**0.33**	**2.31**	**2.36**	**1.10**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.006**	**0.006**	**1.82**	**1.79**	**0.914**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**106**	**116**	**22**	**20**	**11**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**16**	**17**	**7**	**10**	**2**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**26**	**19**	**9**	**9**	**34**
EG020: Lead	7439-92-1	1	µg/L		**11**	**11**	**1**	**2**	**6**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	<1	**2**	**2**	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**23**	**17**	**76**	**83**	**61**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**3500**	**4100**	**56000**	**49000**	**160**

Sub-Matrix: **WATER**

Compound	*CAS Number*	*LOR*	*Unit*	*Client sample ID* / *Client sampling date / time*	**SSNV2 - M - DUP** [15-OCT-2016]	**TW1 - M** [15-OCT-2016]	**TW1 - M - DUP** [15-OCT-2016]		
					HK1641853-016	**HK1641853-017**	**HK1641853-018**		
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**10.0**	**3.4**	**2.3**		
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.979**	**0.029**	**0.030**		
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.319**	**0.003**	<0.002		
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.697**	**0.082**	**0.086**		
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**1.08**	**0.08**	**0.13**		
EK067P: Total Phosphorus as P	----	0.02	mg/L		**1.05**	**0.03**	**0.04**		
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.869**	**0.014**	**0.014**		
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**9**	**7**	**5**		
EP030: Biochemical Oxygen Demand	----	1	mg/L		**2**	<1	<1		
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10		
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1		
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1		
EG020: Copper	7440-50-8	1	µg/L		**26**	**1**	**1**		
EG020: Lead	7439-92-1	1	µg/L		**5**	<1	<1		
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1		
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1		
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1		
EG020: Zinc	7440-66-6	10	µg/L		**59**	**12**	**14**		
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**200**	**3700**	**4100**		

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4332840)								
HK1641853-003	HC2 -M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	43.4	43.0	0.8
HK1641853-011	LFT3 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	128	123	4.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332170)								
HK1641853-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.002	mg/L	0.077	0.080	3.8
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332309)								
HK1641853-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	0.018	0.019	5.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332827)								
HK1641739-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	28.2	28.1	0.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332828)								
HK1641952-004	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	27.1	28.5	5.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336882)								
HK1641716-001	Anonymous	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.20	0.21	4.9
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336884)								
HK1641853-018	TW1 - M - DUP	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	0.04	0.04	0.0
EG: Metals and Major Cations (QC Lot: 4332905)								
HK1641853-002	HC1 - M - DUP	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
HK1641853-011	LFT3 - M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	1	0.0
		EG020: Copper	7440-50-8	1	µg/L	26	29	13.3
		EG020: Lead	7439-92-1	1	µg/L	11	11	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	23	26	14.6
EP: Aggregate Organics (QC Lot: 4337611)								
HK1641853-006	HC3 - M - DUP	**EP026: Chemical Oxygen Demand**	----	2	mg/L	77	76	2.2
EP: Aggregate Organics (QC Lot: 4338858)								
HK1641853-008	LFT1 - M - DUP	**EP026: Chemical Oxygen Demand**	----	2	mg/L	8	8	0.0
EP: Aggregate Organics (QC Lot: 4340254)								

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP: Aggregate Organics (QC Lot: 4340254) - Continued								
HK1642267-003	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	24	22	7.4

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4332840)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	105	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332170)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332309)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	109	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332827)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.9	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332828)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	94.5	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336882)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	99.1	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336884)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.8	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4332905)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	83.6	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	89.7	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	90.6	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	89.6	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	92.2	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	85.5	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	87.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	87.2	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	97.9	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4333009)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	102	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4337611)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	100	----	91	105	----	----
				----	20 mg/L	94.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4338858)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	92.8	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4340254)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	96.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332170)										
HK1641527-001	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	95.4	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332309)										
HK1641853-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332827)										
HK1641739-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	50 mg/L	100	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332828)										
HK1641952-004	Anonymous	**EK055K: Ammonia as N**	7664-41-7	50 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336882)										
HK1641716-001	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	100	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336884)										
HK1641853-018	TW1 - M - DUP	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4332905)										
HK1641853-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	85.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	89.1	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	87.8	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	89.0	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	91.9	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	84.4	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	85.6	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	85.7	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	92.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4337611)										
HK1641716-001	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	97.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4338858)										
HK1641853-007	LFT1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	86.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4340254)										
HK1641853-018	TW1 - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	91.3	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
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Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 17-OCT-2016
Order number	: 0080/16			Issue Date	: 01-NOV-2016
C-O-C number	: ----			No. of samples received	: 18
Site	: ----			No. of samples analysed	: 18

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 17-OCT-2016 to 01-NOV-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1641897

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in ambient condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 15:00. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]
				HK1641897-001	HK1641897-002	HK1641897-003	HK1641897-004	HK1641897-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	9.6	7.7	30.8	31.4	53.5
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.090	0.090	1.90	1.98	3.62
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.010	0.009	0.263	0.304	0.354
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	0.253	0.248	0.191	0.186	1.00
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	0.20	0.20	5.19	4.41	8.33
EK067P: Total Phosphorus as P	----	0.02	mg/L	0.09	0.09	0.52	0.52	0.91
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.060	0.059	0.113	0.140	0.307
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	4	4	131	134	74
EP030: Biochemical Oxygen Demand	----	1	mg/L	<1	<1	43	35	14
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	<1	<1	4	4	40
EG020: Lead	7439-92-1	1	µg/L	<1	<1	<1	1	4
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	3	3	3
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	13	<10	29	26	59
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	12000	44000	44000	46000	14000

Sub-Matrix: **WATER**			*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
			Client sampling date / time	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*	**HK1641897-006**	**HK1641897-007**	**HK1641897-008**	**HK1641897-009**	**HK1641897-010**
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**52.9**	**4.0**	**3.5**	**38.9**	**37.4**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**3.45**	**0.937**	**0.840**	**6.57**	**6.29**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	**0.345**	**0.245**	**0.234**	**0.217**	**0.220**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**1.02**	**0.834**	**0.857**	**0.462**	**0.479**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**7.82**	**1.30**	**1.27**	**7.25**	**7.47**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.93**	**0.44**	**0.43**	**2.13**	**2.14**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.305**	**0.347**	**0.346**	**1.72**	**1.80**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**79**	**8**	**8**	**19**	**20**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**14**	**3**	**3**	**5**	**5**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	**53**	**2**	**2**	**23**	**22**
EG020: Lead	7439-92-1	1	µg/L	**4**	**1**	**1**	**11**	**10**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	**3**	<1	<1	**1**	**1**
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	**71**	<10	**13**	**57**	**55**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**19000**	**13000**	**13000**	**30000**	**36000**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641897-011**	**HK1641897-012**	**HK1641897-013**	**HK1641897-014**	**HK1641897-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**79.7**	**78.3**	**6.9**	**6.0**	**5.0**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.055**	**0.055**	**1.46**	**1.41**	**0.929**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.251**	**0.250**	**0.167**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.799**	**0.790**	**0.603**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**4.89**	**4.21**	**2.18**	**2.16**	**1.37**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.27**	**0.26**	**1.29**	**1.30**	**0.95**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.006**	**0.006**	**1.12**	**1.15**	**0.852**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**101**	**96**	**11**	**11**	**8**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**18**	**16**	**4**	**4**	**4**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**21**	**19**	**4**	**3**	**22**
EG020: Lead	7439-92-1	1	µg/L		**11**	**9**	**1**	<1	**5**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**48**	**41**	**34**	**30**	**42**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**71**	**84**	**110000**	**140000**	**14000**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**		
				Client sampling date / time	[17-OCT-2016]	[17-OCT-2016]	[17-OCT-2016]		
Compound	*CAS Number*	*LOR*	*Unit*		**HK1641897-016**	**HK1641897-017**	**HK1641897-018**		
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**7.2**	**15.0**	**13.4**		
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.931**	**0.035**	**0.032**		
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.170**	**0.007**	**0.006**		
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.597**	**0.073**	**0.065**		
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**1.40**	**0.16**	**0.16**		
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.99**	**0.05**	**0.05**		
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.840**	**0.015**	**0.014**		
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**9**	**7**	**6**		
EP030: Biochemical Oxygen Demand	----	1	mg/L		**3**	**1**	<1		
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10		
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1		
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1		
EG020: Copper	7440-50-8	1	µg/L		**18**	<1	<1		
EG020: Lead	7439-92-1	1	µg/L		**4**	**2**	**2**		
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1		
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1		
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1		
EG020: Zinc	7440-66-6	10	µg/L		**46**	<10	**10**		
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**18000**	**360**	**400**		

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4332902)								
HK1641897-001	HC1 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	9.6	10.3	7.0
HK1641897-011	LFT3 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	79.7	82.7	3.7
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332171)								
HK1641897-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.060	0.058	3.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332309)								
HK1641853-001	Anonymous	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.018	0.019	5.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332312)								
HK1641853-011	Anonymous	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332828)								
HK1641952-004	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	27.1	28.5	5.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332829)								
HK1641952-001	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.11	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340003)								
HK1641530-043	Anonymous	EK067P: Total Phosphorus as P	----	0.01	mg/L	0.05	0.05	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340005)								
HK1641530-046	Anonymous	EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0
EG: Metals and Major Cations (QC Lot: 4332905)								
HK1641853-002	Anonymous	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
HK1641853-011	Anonymous	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	1	0.0
		EG020: Copper	7440-50-8	1	µg/L	26	29	13.3
		EG020: Lead	7439-92-1	1	µg/L	11	11	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	23	26	14.6
EG: Metals and Major Cations (QC Lot: 4332906)								
HK1641897-004	HC2 - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4332906) - Continued								
HK1641897-004	HC2 - M - DUP	**EG020: Copper**	7440-50-8	1	µg/L	4	4	0.0
		EG020: Lead	7439-92-1	1	µg/L	1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	3	3	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	26	25	0.0
HK1641897-013	SSNV1 - M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	4	4	0.0
		EG020: Lead	7439-92-1	1	µg/L	1	2	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	34	36	6.5
EP: Aggregate Organics (QC Lot: 4341640)								
HK1641897-016	SSNV2 - M - DUP	**EP026: Chemical Oxygen Demand**	----	2	mg/L	9	8	14.0
EP: Aggregate Organics (QC Lot: 4341643)								
HK1641952-003	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	4	4	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4332902)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	103	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332171)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332309)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	109	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332312)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	100	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332828)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	94.5	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332829)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.7	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340003)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.2	----	93	103	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340005)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.6	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4332905)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	83.6	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	89.7	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	90.6	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	89.6	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	92.2	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	85.5	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	87.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	87.2	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	97.9	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 4332906)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	82.1	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	89.5	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	85.1	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	86.6	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	91.7	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	88.3	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	85.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	85.4	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	97.8	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4333027)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	102	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4341640)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	94.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4341643)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	93.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332171)										
HK1641897-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	84.8	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332309)										
HK1641853-001	Anonymous	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332312)										
HK1641853-011	Anonymous	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	98.4	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332828)										
HK1641952-004	Anonymous	**EK055K: Ammonia as N**	7664-41-7	50 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4332829)										
HK1641952-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	94.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340003)										
HK1641530-043	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	90.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340005)										
HK1641530-046	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	94.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4332905)										
HK1641853-001	Anonymous	**EG020: Arsenic**	7440-38-2	100 µg/L	85.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	89.1	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	87.8	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	89.0	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	91.9	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	84.4	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	85.6	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	85.7	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	92.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4332906)										
HK1641897-003	HC2 -M	**EG020: Arsenic**	7440-38-2	100 µg/L	84.6	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	87.2	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	89.3	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	89.4	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	91.5	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	89.3	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	86.5	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	83.3	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	90.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4341640)										
HK1641897-001	HC1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	88.0	----	75	125	----	----

Matrix: WATER

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report										
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP: Aggregate Organics (QC Lot: 4341643)										
HK1641897-014	SSNV1 - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	80.0	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 10
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1642267
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 19-OCT-2016
Order number	: 0080/16			Issue Date	: 31-OCT-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 19-OCT-2016 to 31-OCT-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1642267

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in ambient condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 15:00. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID	HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]
					HK1642267-001	HK1642267-002	HK1642267-003	HK1642267-004	HK1642267-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**342**	**330**	**171**	**195**	**45.0**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.039**	**0.043**	**0.086**	**0.075**	**0.914**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.009**	**0.006**	**0.048**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.319**	**0.315**	**0.519**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**1.06**	**0.90**	**0.70**	**0.73**	**2.07**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.14**	**0.11**	**0.15**	**0.16**	**0.56**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.003**	**0.003**	**0.050**	**0.050**	**0.330**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**28**	**25**	**24**	**28**	**35**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**2**	**1**	**2**	**2**	**2**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		**1**	**2**	**6**	**6**	**2**
EG020: Copper	7440-50-8	1	µg/L		**9**	**12**	**7**	**7**	**21**
EG020: Lead	7439-92-1	1	µg/L		**5**	**7**	**8**	**7**	**7**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	**1**	**2**	**3**	**2**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**28**	**33**	**47**	**49**	**92**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**8100**	**6200**	**31000**	**27000**	**16000**

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1642267-006**	**HK1642267-007**	**HK1642267-008**	**HK1642267-009**	**HK1642267-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**47.6**	**17.3**	**19.4**	**66.3**	**61.2**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.940**	**0.302**	**0.283**	**0.380**	**0.384**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.049**	**0.032**	**0.028**	**0.026**	**0.023**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.522**	**0.600**	**0.596**	**0.714**	**0.702**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.09**	**0.78**	**0.77**	**1.00**	**0.94**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.57**	**0.57**	**0.58**	**0.58**	**0.53**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.326**	**0.466**	**0.457**	**0.350**	**0.356**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**31**	**17**	**18**	**15**	**16**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**3**	**2**	**2**	**2**	**2**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		**2**	**1**	**1**	**2**	**1**
EG020: Copper	7440-50-8	1	µg/L		**20**	**24**	**27**	**15**	**14**
EG020: Lead	7439-92-1	1	µg/L		**6**	**8**	**8**	**28**	**24**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	**2**	**2**	**2**	**1**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**114**	**47**	**47**	**103**	**96**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**27000**	**17000**	**20000**	**6500**	**5900**

Sub-Matrix: **WATER**			*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
			Client sampling date / time	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*	**HK1642267-011**	**HK1642267-012**	**HK1642267-013**	**HK1642267-014**	**HK1642267-015**
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**59.3**	**55.3**	**21.7**	**19.6**	**33.8**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.034**	**0.027**	**20.0**	**20.5**	**0.261**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	**0.034**	**0.036**	**0.013**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	<0.002	<0.002	**0.766**	**0.772**	**0.687**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**2.96**	**3.10**	**20.8**	**21.0**	**0.52**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.25**	**0.25**	**2.33**	**2.33**	**0.28**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.004**	**0.003**	**2.16**	**2.09**	**0.192**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**78**	**66**	**25**	**25**	**14**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**11**	**9**	**7**	**7**	**2**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	**1**	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	**15**	**12**	**8**	**10**	**6**
EG020: Lead	7439-92-1	1	µg/L	**7**	**7**	**3**	**5**	**7**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	**1**	**1**	**2**	**2**	<1
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	**38**	**35**	**33**	**40**	**41**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**2400**	**3300**	**20000**	**32000**	**85000**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]	[19-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1642267-016**	**HK1642267-017**	**HK1642267-018**	**HK1642267-019**	**HK1642267-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**36.2**	**10.5**	**9.6**	**14.0**	**12.4**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.218**	**0.051**	**0.043**	**0.046**	**0.054**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.015**	<0.002	<0.002	**0.005**	**0.005**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.680**	**0.139**	**0.139**	**0.113**	**0.107**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**0.56**	**0.46**	**0.41**	**0.40**	**0.34**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.30**	**0.19**	**0.19**	**0.15**	**0.14**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.194**	**0.121**	**0.126**	**0.089**	**0.087**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**12**	**17**	**16**	**15**	**16**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**2**	**1**	**1**	**1**	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**5**	**14**	**17**	**10**	**10**
EG020: Lead	7439-92-1	1	µg/L		**5**	**3**	**4**	**4**	**4**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	**1**	**1**	**1**	**1**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**34**	**34**	**40**	**25**	**24**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**74000**	**7800**	**5200**	**110000**	**160000**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4336671)								
HK1642267-001	HC1 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	342	356	3.8
HK1642267-011	LFT3 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	59.3	56.0	5.8
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334704)								
HK1642267-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.002	mg/L	0.003	0.003	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336651)								
HK1642177-011	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	0.05	0.05	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336652)								
HK1642267-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.025	mg/L	0.039	0.036	8.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4337179)								
HK1642267-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340005)								
HK1641530-046	Anonymous	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	<0.01	<0.01	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340007)								
HK1642267-020	TW2A - M - DUP	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	0.14	0.14	0.0
EG: Metals and Major Cations (QC Lot: 4334518)								
HK1642267-002	HC1 - M - DUP	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	2	2	0.0
		EG020: Copper	7440-50-8	1	µg/L	12	12	0.0
		EG020: Lead	7439-92-1	1	µg/L	7	6	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	33	35	6.9
HK1642267-011	LFT3 - M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	15	14	0.0
		EG020: Lead	7439-92-1	1	µg/L	7	7	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	38	40	3.7
EP: Aggregate Organics (QC Lot: 4340254)								
HK1642267-003	HC2 -M	**EP026: Chemical Oxygen Demand**	----	2	mg/L	24	22	7.4
EP: Aggregate Organics (QC Lot: 4340255)								
HK1642267-015	SSNV2 - M	**EP026: Chemical Oxygen Demand**	----	2	mg/L	14	14	0.0
EP: Aggregate Organics (QC Lot: 4341643)								

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP: Aggregate Organics (QC Lot: 4341643) - Continued								
HK1641952-003	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	4	4	0.0
EP: Aggregate Organics (QC Lot: 4341646)								
HK1642534-001	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	30	28	5.8

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4336671)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	104	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334704)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	102	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334705)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	102	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336651)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.9	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336652)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.8	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4337179)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	97.2	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340005)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.6	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340007)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	100	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4334518)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	96.4	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	89.4	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	100	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	99.7	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	96.3	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	103	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	98.0	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	85.6	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	102	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4336952)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	106	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4340254)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	96.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4340255)											

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP: Aggregate Organics (QC Lot: 4340255) - Continued											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	--	----	91	105	----	----
				----	20 mg/L	92.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4341643)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	93.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4341646)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	94.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334704)										
HK1642267-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	91.4	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4334705)										
HK1642267-011	LFT3 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	93.6	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336651)										
HK1642177-011	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4336652)										
HK1642267-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	94.6	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4337179)										
HK1642267-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	96.6	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340005)										
HK1641530-046	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	94.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340007)										
HK1642267-020	TW2A - M - DUP	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4334518)										
HK1642267-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	88.1	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	92.9	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	91.8	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	84.5	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	86.7	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	97.5	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	86.3	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	86.1	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	95.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4340254)										
HK1641853-018	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	91.3	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4340255)										
HK1642267-001	HC1 - M	**EP026: Chemical Oxygen Demand**	----	40 mg/L	96.2	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4341643)										
HK1641897-014	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	80.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4341646)										
HK1642267-020	TW2A - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	81.0	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1642578
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 24-OCT-2016
Order number	: 0080/16			Issue Date	: 07-NOV-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 24-OCT-2016 to 05-NOV-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1642578

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in ambient condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 09:00. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID	HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]
					HK1642578-001	HK1642578-002	HK1642578-003	HK1642578-004	HK1642578-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**16.1**	**14.6**	**12.7**	**11.2**	**41.2**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.054**	**0.058**	**0.534**	**0.533**	**2.29**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.004**	**0.002**	**0.033**	**0.035**	**0.086**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.169**	**0.173**	**0.409**	**0.414**	**0.311**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**0.21**	**0.18**	**0.92**	**0.93**	**3.56**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.05**	**0.04**	**0.13**	**0.14**	**0.69**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.020**	**0.023**	**0.068**	**0.072**	**0.406**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**4**	**4**	**8**	**10**	**27**
EP030: Biochemical Oxygen Demand	----	1	mg/L		<1	<1	**2**	**1**	**5**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		<1	<1	**1**	**2**	**12**
EG020: Lead	7439-92-1	1	µg/L		**1**	**1**	<1	**1**	**5**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	**3**	**2**	**2**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**19**	**15**	**18**	**10**	**55**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**2500**	**2900**	**8600**	**8800**	**590**

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1642578-006**	**HK1642578-007**	**HK1642578-008**	**HK1642578-009**	**HK1642578-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**42.5**	**8.2**	**10.4**	**16.6**	**18.5**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**2.27**	**0.891**	**0.919**	**0.832**	**0.776**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.085**	**0.146**	**0.150**	**0.073**	**0.088**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.325**	**1.05**	**1.06**	**0.967**	**0.970**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.72**	**1.51**	**1.66**	**1.01**	**1.02**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.72**	**0.58**	**0.57**	**0.42**	**0.41**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.406**	**0.464**	**0.464**	**0.317**	**0.315**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**28**	**10**	**9**	**8**	**8**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**6**	**2**	**1**	**1**	**1**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**15**	**3**	**3**	**9**	**8**
EG020: Lead	7439-92-1	1	µg/L		**4**	**2**	**1**	**6**	**4**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	**2**	**2**	**1**	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**57**	**20**	**28**	**33**	**31**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**910**	**2100**	**2600**	**440**	**500**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1642578-011**	**HK1642578-012**	**HK1642578-013**	**HK1642578-014**	**HK1642578-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**66.4**	**71.5**	**6.8**	**9.2**	**7.4**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.042**	**0.037**	**0.317**	**0.294**	**0.243**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.028**	**0.034**	**0.033**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.795**	**0.791**	**0.751**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.95**	**3.27**	**0.46**	**0.42**	**0.44**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.24**	**0.27**	**0.22**	**0.22**	**0.19**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.002**	<0.002	**0.182**	**0.186**	**0.155**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**57**	**58**	**4**	**3**	**3**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**10**	**13**	<1	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**9**	**9**	**2**	**2**	**4**
EG020: Lead	7439-92-1	1	µg/L		**6**	**6**	**1**	**1**	**1**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**34**	**35**	**18**	**18**	**18**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**2800**	**2500**	**560**	**450**	**970**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]	[22-OCT-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1642578-016**	**HK1642578-017**	**HK1642578-018**	**HK1642578-019**	**HK1642578-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**9.3**	**3.7**	**3.2**	**7.6**	**10.4**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.267**	**0.053**	**0.047**	**0.044**	**0.033**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.026**	**0.006**	**0.002**	**0.003**	<0.002
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.756**	**0.153**	**0.150**	**0.133**	**0.133**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**0.45**	**0.17**	**0.14**	**0.19**	**0.15**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.18**	**0.04**	**0.03**	**0.04**	**0.04**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.140**	**0.022**	**0.015**	**0.014**	**0.015**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**3**	**5**	**5**	**6**	**6**
EP030: Biochemical Oxygen Demand	----	1	mg/L		<1	<1	<1	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**4**	**1**	**1**	**1**	<1
EG020: Lead	7439-92-1	1	µg/L		**1**	**1**	**1**	**2**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**10**	**35**	**39**	**15**	**19**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**850**	**690**	**890**	**320**	**630**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4339241)								
HK1642578-001	HC1 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	16.1	17.2	6.8
HK1642578-011	LFT3 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	66.4	67.0	0.9
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339286)								
HK1641530-045	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.22	0.23	4.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339287)								
HK1642578-001	HC1 - M	EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.054	0.053	1.9
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339294)								
HK1642578-011	LFT3 - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340032)								
HK1642578-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.020	0.019	5.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340033)								
HK1642578-011	LFT3 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.002	0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342395)								
HK1642323-041	Anonymous	EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342397)								
HK1642578-007	LFT1 - M	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.58	0.57	1.7
EG: Metals and Major Cations (QC Lot: 4339269)								
HK1642578-002	HC1 - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	1	1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	15	14	9.1
HK1642578-011	LFT3 - M	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	9	8	0.0
		EG020: Lead	7439-92-1	1	µg/L	6	6	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	34	29	16.2
EP: Aggregate Organics (QC Lot: 4342552)								
HK1642534-008	Anonymous	EP026: Chemical Oxygen Demand	----	2	mg/L	<2	<2	0.0
EP: Aggregate Organics (QC Lot: 4344025)								

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP: Aggregate Organics (QC Lot: 4344025) - Continued								
HK1642578-014	SSNV1 - M - DUP	**EP026: Chemical Oxygen Demand**	----	2	mg/L	3	4	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4339241)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	105	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339286)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.9	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339287)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.9	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339294)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	103	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340032)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340033)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342395)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.2	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342397)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.8	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4339269)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	90.1	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	92.6	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	94.4	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	91.8	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	96.4	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	87.1	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	89.1	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	95.9	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	95.0	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4340759)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	105	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4342552)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	99.1	----	91	105	----	----
				----	20 mg/L	90.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4344025)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	93.5	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339286)										
HK1641530-045	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	86.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339287)										
HK1642578-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	93.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339294)										
HK1642578-011	LFT3 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	107	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340032)										
HK1642578-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	95.2	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340033)										
HK1642578-011	LFT3 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	98.8	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342395)										
HK1642323-041	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342397)										
HK1642578-007	LFT1 - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	92.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4339269)										
HK1642578-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	95.7	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	91.3	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	99.7	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	96.2	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	101	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	98.6	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	91.1	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	89.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	85.8	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4342552)										
HK1642523-003	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	93.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4344025)										
HK1642578-007	LFT1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	87.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	**Work Order**	: **HK1642593**
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 24-OCT-2016
Order number	: 0080/16			Issue Date	: 07-NOV-2016
C-O-C number	: ----			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 24-OCT-2016 to 05-NOV-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1642593

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 10:35. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: TW2A - M Client sampling date / time: [24-OCT-2016] HK1642593-001	Client sample ID: TW2A - M - DUP Client sampling date / time: [24-OCT-2016] HK1642593-002			
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**23.2**	**24.0**			
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.028**	**0.036**			
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002			
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.093**	**0.092**			
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**0.43**	**0.42**			
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.04**	**0.04**			
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.012**	**0.011**			
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**7**	**7**			
EP030: Biochemical Oxygen Demand	----	1	mg/L	**2**	**2**			
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10			
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1			
EG020: Chromium	7440-47-3	1	µg/L	<1	<1			
EG020: Copper	7440-50-8	1	µg/L	**4**	**6**			
EG020: Lead	7439-92-1	1	µg/L	<1	**6**			
EG020: Mercury	7439-97-6	1	µg/L	<1	<1			
EG020: Nickel	7440-02-0	1	µg/L	<1	<1			
EG020: Silver	7440-22-4	1	µg/L	<1	<1			
EG020: Zinc	7440-66-6	10	µg/L	<10	**110**			
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**560**	**710**			

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4339242)								
HK1642593-001	TW2A - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	23.2	21.6	7.2
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339287)								
HK1642578-001	Anonymous	EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.054	0.053	1.9
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339298)								
HK1642593-001	TW2A - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340033)								
HK1642578-011	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.002	0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342397)								
HK1642578-007	Anonymous	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.58	0.57	1.7
EG: Metals and Major Cations (QC Lot: 4339270)								
HK1642593-002	TW2A - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	6	6	0.0
		EG020: Lead	7439-92-1	1	µg/L	6	6	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	110	110	0.0
EP: Aggregate Organics (QC Lot: 4344025)								
HK1642578-014	Anonymous	EP026: Chemical Oxygen Demand	----	2	mg/L	3	4	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4339242)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	100	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339287)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.9	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339298)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	105	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340033)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342397)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.8	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4339270)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	89.0	----	79	109	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4339270) - Continued											
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	87.0	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	95.8	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	95.3	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	93.7	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	88.4	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	92.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	87.9	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	83.7	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4340772)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	104	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4344025)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	93.5	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339287)										
HK1642578-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	93.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4339298)										
HK1642593-001	TW2A - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4340033)										
HK1642578-011	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	98.8	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342397)										
HK1642578-007	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	92.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4339270)										
HK1642593-001	TW2A - M	**EG020: Arsenic**	7440-38-2	100 µg/L	91.1	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	90.8	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	93.5	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	95.6	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	96.9	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	93.0	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	89.9	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	75.7	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	89.1	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4344025)										
HK1642578-007	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	87.5	----	75	125	----	----

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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1642984
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 26-OCT-2016
Order number	: 0080/16			Issue Date	: 09-NOV-2016
C-O-C number	: ----			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 26-OCT-2016 to 09-NOV-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1642984

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 16:00. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: TW2A - M Client sampling date / time: [26-OCT-2016] HK1642984-001	Client sample ID: TW2A - M - DUP Client sampling date / time: [26-OCT-2016] HK1642984-002			
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**5.9**	**7.0**			
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.043**	**0.047**			
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002			
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.070**	**0.064**			
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**0.13**	**0.15**			
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.03**	**0.04**			
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.010**	**0.019**			
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**7**	**6**			
EP030: Biochemical Oxygen Demand	----	1	mg/L	**1**	<1			
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10			
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1			
EG020: Chromium	7440-47-3	1	µg/L	<1	<1			
EG020: Copper	7440-50-8	1	µg/L	**3**	**3**			
EG020: Lead	7439-92-1	1	µg/L	**2**	**2**			
EG020: Mercury	7439-97-6	1	µg/L	<1	<1			
EG020: Nickel	7440-02-0	1	µg/L	**1**	**1**			
EG020: Silver	7440-22-4	1	µg/L	<1	<1			
EG020: Zinc	7440-66-6	10	µg/L	**27**	**34**			
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**1800**	**1600**			

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4342020)								
HK1642984-001	TW2A - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	5.9	6.5	9.7
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342074)								
HK1642984-001	TW2A - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.010	0.010	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342076)								
HK1642707-025	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342077)								
HK1643014-004	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	1.80	1.80	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342399)								
HK1642578-017	Anonymous	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.04	0.04	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343422)								
HK1642984-001	TW2A - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
EG: Metals and Major Cations (QC Lot: 4342061)								
HK1642930-001	Anonymous	EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	19	21	10.7
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	3	3	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	41	39	4.3
EP: Aggregate Organics (QC Lot: 4344026)								
HK1642984-002	TW2A - M - DUP	EP026: Chemical Oxygen Demand	----	2	mg/L	6	8	27.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4342020)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	108	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342074)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	96.3	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342076)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.2	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342077)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.7	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342399)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.3	----	93	103	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343422)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	107	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 4342061)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	93.8	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	90.4	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	100	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	95.4	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	96.9	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	98.2	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	93.5	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	93.1	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	100	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4342079)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	104	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4344026)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	92.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342074)										
HK1642984-001	TW2A - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	92.2	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342076)										
HK1642707-025	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	104	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342077)										
HK1643014-004	Anonymous	**EK055K: Ammonia as N**	7664-41-7	5 mg/L	101	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4342399)										
HK1642578-017	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343422)										
HK1642984-001	TW2A - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	98.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4342061)										
HK1642586-001	Anonymous	**EG020: Arsenic**	7440-38-2	100 µg/L	89.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	92.6	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	96.7	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	90.0	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	106	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	89.4	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	87.0	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	90.3	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	103	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4344026)										
HK1642578-019	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	86.5	----	75	125	----	----

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CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1643268
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 28-OCT-2016
Order number	: 0080/16			Issue Date	: 11-NOV-2016
C-O-C number	: ----			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 28-OCT-2016 to 11-NOV-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1643268

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 12:30. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: TW2A - M Client sampling date / time: [28-OCT-2016] HK1643268-001	Client sample ID: TW2A - M - DUP Client sampling date / time: [28-OCT-2016] HK1643268-002			
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**6.3**	**6.7**			
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.063**	**0.052**			
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002			
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.060**	**0.059**			
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**0.67**	**0.59**			
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.02**	**0.02**			
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.011**	**0.011**			
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**12**	**10**			
EP030: Biochemical Oxygen Demand	----	1	mg/L	**3**	**2**			
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10			
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1			
EG020: Chromium	7440-47-3	1	µg/L	<1	<1			
EG020: Copper	7440-50-8	1	µg/L	<1	**3**			
EG020: Lead	7439-92-1	1	µg/L	<1	**2**			
EG020: Mercury	7439-97-6	1	µg/L	<1	<1			
EG020: Nickel	7440-02-0	1	µg/L	<1	**2**			
EG020: Silver	7440-22-4	1	µg/L	<1	<1			
EG020: Zinc	7440-66-6	10	µg/L	**11**	**22**			
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**1500**	**1900**			

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4343337)								
HK1643268-001	TW2A - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	6.3	5.2	20.7
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343422)								
HK1642984-001	Anonymous	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343982)								
HK1643060-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	14.6	12.2	18.2
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347599)								
HK1643726-002	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.01	mg/L	0.16	0.16	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347639)								
HK1643268-001	TW2A - M	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	0.02	0.02	0.0
EG: Metals and Major Cations (QC Lot: 4343246)								
HK1643268-002	TW2A - M - DUP	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	3	3	0.0
		EG020: Lead	7439-92-1	1	µg/L	2	2	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	2	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	22	18	19.5
EP: Aggregate Organics (QC Lot: 4344026)								
HK1642984-002	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	6	8	27.0
EP: Aggregate Organics (QC Lot: 4345517)								
HK1642628-010	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	38	35	9.3

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4343337)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	96.0	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343422)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	107	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343982)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.8	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347599)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347639)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.3	----	93	103	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4343246)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	95.7	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	96.0	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	92.6	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	95.4	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	92.2	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	88.5	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	94.0	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	92.1	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	94.4	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4343702)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	109	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4344026)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	92.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4345517)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	98.6	----	91	105	----	----
				----	20 mg/L	96.5	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343422)										
HK1642984-001	Anonymous	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4343982)										
HK1643060-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	50 mg/L	91.1	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347599)										
HK1643726-002	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347639)										
HK1643268-001	TW2A - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4343246)										
HK1643268-001	TW2A - M	**EG020: Arsenic**	7440-38-2	100 µg/L	98.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	97.3	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	96.3	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	100	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	90.2	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	87.7	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	99.1	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	83.8	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	94.8	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4344026)										
HK1642578-019	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	86.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4345517)										
HK1642628-001	Anonymous	**EP026: Chemical Oxygen Demand**	----	200 mg/L	88.2	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1643549
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 31-OCT-2016
Order number	: 0080/16			Issue Date	: 14-NOV-2016
C-O-C number	: ----			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 31-OCT-2016 to 14-NOV-2016

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1643549

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 16:35. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: TW2A - M Client sampling date / time: [31-OCT-2016] HK1643549-001	Client sample ID: TW2A - M - DUP Client sampling date / time: [31-OCT-2016] HK1643549-002			
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**2.8**	**3.4**			
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**0.035**	**0.036**			
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002			
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.057**	**0.047**			
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**0.53**	**0.35**			
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.02**	**0.02**			
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.014**	**0.011**			
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**10**	**10**			
EP030: Biochemical Oxygen Demand	----	1	mg/L	**4**	**8**			
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10			
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1			
EG020: Chromium	7440-47-3	1	µg/L	<1	<1			
EG020: Copper	7440-50-8	1	µg/L	**2**	**2**			
EG020: Lead	7439-92-1	1	µg/L	<1	<1			
EG020: Mercury	7439-97-6	1	µg/L	<1	<1			
EG020: Nickel	7440-02-0	1	µg/L	<1	<1			
EG020: Silver	7440-22-4	1	µg/L	<1	<1			
EG020: Zinc	7440-66-6	10	µg/L	**11**	**13**			
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**2500**	**4500**			

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4345597)								
HK1643549-001	TW2A - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.8	3.8	30.6
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347357)								
HK1643549-002	TW2A - M - DUP	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347599)								
HK1643726-002	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.16	0.16	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347639)								
HK1643268-001	Anonymous	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.02	0.02	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4348082)								
HK1643549-002	TW2A - M - DUP	EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.036	0.036	0.0
EG: Metals and Major Cations (QC Lot: 4345601)								
HK1643385-002	Anonymous	EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
		EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	369	352	4.7
		EG020: Lead	7439-92-1	1	µg/L	1	1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	10	µg/L	<10	<10	0.0
		EG020: Nickel	7440-02-0	10	µg/L	23	22	6.0
		EG020: Zinc	7440-66-6	10	µg/L	28	28	0.0
		EG020: Arsenic	7440-38-2	100	µg/L	<100	<100	0.0
EP: Aggregate Organics (QC Lot: 4351638)								
HK1644283-002	Anonymous	EP026: Chemical Oxygen Demand	----	2	mg/L	20	21	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4345597)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	94.5	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347357)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	101	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347599)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347639)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.3	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4348082)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.3	----	93	109	----	----
EG: Metals and Major Cations (QC Lot: 4345601)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	94.3	----	79	109	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4345601) - Continued											
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	93.3	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	100	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	100	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	99.4	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	99.0	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	95.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	88.3	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	91.9	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4346995)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	103	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4351638)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	91.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347357)										
HK1643549-002	TW2A - M - DUP	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	103	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347599)										
HK1643726-002	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4347639)										
HK1643268-001	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4348082)										
HK1643549-002	TW2A - M - DUP	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	97.6	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4345601)										
HK1643385-001	Anonymous	**EG020: Arsenic**	7440-38-2	100 µg/L	83.5	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	86.2	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	95.5	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	100	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	93.4	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	106	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	88.0	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	82.8	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	114	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4351638)										
HK1644283-003	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	102	----	75	125	----	----

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MaterialLab

Dry Season

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1647088
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 22-NOV-2016
Order number	: 0080/16			Issue Date	: 06-DEC-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 22-NOV-2016 to 06-DEC-2016.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1647088

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 16:35. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]
				HK1647088-001	HK1647088-002	HK1647088-003	HK1647088-004	HK1647088-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	16.5	18.1	31.6	33.1	26.4
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.122	0.123	1.30	1.28	7.48
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.014	0.015	<0.002	0.005	0.135
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	0.335	0.316	0.005	0.004	0.322
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	0.59	0.53	3.29	3.38	8.99
EK067P: Total Phosphorus as P	----	0.02	mg/L	0.13	0.11	0.40	0.41	0.92
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.042	0.042	0.018	0.016	0.615
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	9	9	55	58	36
EP030: Biochemical Oxygen Demand	----	1	mg/L	3	2	30	31	6
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	4	4	4	4	2
EG020: Lead	7439-92-1	1	µg/L	3	4	1	2	2
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	2	2	2
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	24	34	38	39	33
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	11000	13000	820000	910000	380

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647088-006**	**HK1647088-007**	**HK1647088-008**	**HK1647088-009**	**HK1647088-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**27.5**	**2.4**	**2.7**	**38.0**	**38.6**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**7.40**	**2.57**	**2.58**	**2.20**	**2.30**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.140**	**0.234**	**0.238**	**0.103**	**0.101**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.352**	**0.747**	**0.752**	**0.411**	**0.415**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**8.76**	**2.88**	**3.01**	**3.70**	**3.44**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.93**	**0.49**	**0.50**	**1.26**	**1.28**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.613**	**0.397**	**0.399**	**0.840**	**0.835**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**36**	**11**	**14**	**19**	**20**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**8**	**3**	**3**	**4**	**5**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**2**	**3**	**4**	**76**	**85**
EG020: Lead	7439-92-1	1	µg/L		**2**	<1	<1	**10**	**11**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	**1**	**1**	**1**	**1**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**28**	**24**	**40**	**197**	**197**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**430**	**58000**	**63000**	**13000**	**20000**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647088-011**	**HK1647088-012**	**HK1647088-013**	**HK1647088-014**	**HK1647088-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**94.2**	**94.6**	**42.8**	**43.0**	**27.5**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.072**	**0.064**	**2.92**	**2.90**	**2.75**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.002**	<0.002	**0.214**	**0.218**	**0.134**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.004**	**0.007**	**0.831**	**0.822**	**0.536**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.66**	**3.44**	**5.62**	**5.75**	**4.38**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.31**	**0.29**	**3.09**	**3.24**	**2.16**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		<0.002	**0.002**	**1.79**	**1.76**	**1.43**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**99**	**87**	**48**	**44**	**30**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**20**	**14**	**18**	**19**	**10**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	**2**	**2**	**1**
EG020: Copper	7440-50-8	1	µg/L		**6**	**6**	**48**	**49**	**29**
EG020: Lead	7439-92-1	1	µg/L		**5**	**4**	**2**	**2**	**5**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	**2**	**2**	**2**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**22**	**21**	**385**	**389**	**195**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**2800**	**3500**	**130000**	**160000**	**26000**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]	[21-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647088-016**	**HK1647088-017**	**HK1647088-018**	**HK1647088-019**	**HK1647088-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**27.4**	**13.7**	**15.3**	**7.7**	**9.2**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**2.68**	**0.088**	**0.101**	**0.052**	**0.056**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.132**	**0.006**	<0.002	**0.002**	<0.002
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.562**	**0.060**	**0.067**	**0.054**	**0.055**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**4.22**	**0.20**	**0.22**	**0.15**	**0.14**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**2.15**	**0.05**	**0.06**	**0.04**	**0.04**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**1.42**	**0.015**	**0.017**	**0.015**	**0.015**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**34**	**6**	**9**	**6**	**6**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**10**	**2**	**2**	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		**1**	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**30**	**1**	**1**	<1	<1
EG020: Lead	7439-92-1	1	µg/L		**5**	**3**	**4**	<1	<1
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**225**	**66**	**138**	**14**	**14**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**19000**	**1200**	**1300**	**1500**	**1900**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4365841)								
HK1647088-001	HC1 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	16.5	16.4	0.0
HK1647088-011	LFT3 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	94.2	95.4	1.3
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365323)								
HK1646683-001	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.01	mg/L	<0.10	<0.10	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365324)								
HK1647088-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.002	mg/L	0.042	0.042	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365329)								
HK1647047-004	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	0.03	0.03	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365330)								
HK1647088-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.025	mg/L	0.122	0.117	4.2
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365338)								
HK1647088-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	0.014	0.016	13.3
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367033)								
HK1646422-006	Anonymous	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.03	0.03	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367036)								
HK1647088-010	LFT2 - M - DUP	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	1.28	1.24	3.2
EG: Metals and Major Cations (QC Lot: 4365904)								
HK1647039-002	Anonymous	**EG020: Cadmium**	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	5	5	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	2	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	11	<10	10.6
HK1647088-007	LFT1 - M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	3	3	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	24	21	11.9
EG: Metals and Major Cations (QC Lot: 4365906)								
HK1647088-018	TW1 - M - DUP	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4365906) - Continued								
HK1647088-018	TW1 - M - DUP	**EG020: Copper**	7440-50-8	1	µg/L	1	1	0.0
		EG020: Lead	7439-92-1	1	µg/L	4	3	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	138	141	2.2
EP: Aggregate Organics (QC Lot: 4368966)								
HK1647088-007	LFT1 - M	**EP026: Chemical Oxygen Demand**	----	2	mg/L	11	11	0.0
EP: Aggregate Organics (QC Lot: 4370111)								
HK1647088-014	SSNV1 - M - DUP	**EP026: Chemical Oxygen Demand**	----	2	mg/L	44	43	0.0
EP: Aggregate Organics (QC Lot: 4370462)								
HK1647088-019	TW2A - M	**EP026: Chemical Oxygen Demand**	----	2	mg/L	6	6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4365841)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	97.5	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365323)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	100	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365324)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365329)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365330)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365338)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	102	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367033)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.1	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367036)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	94.8	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4365904)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	87.8	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	94.0	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	93.5	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	92.4	----	77	113	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4365904) - Continued											
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	91.2	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	87.0	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	91.4	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	94.9	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	91.8	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 4365906)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	88.1	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	92.1	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	84.7	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	83.2	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	96.6	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	92.7	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	89.9	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	90.0	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	87.4	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4365931)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	100	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4368966)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	96.5	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4370111)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	100	----	91	105	----	----
				----	20 mg/L	91.5	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4370462)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	98.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365323)										
HK1646683-001	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	5 mg/L	96.4	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365324)										
HK1647088-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	96.4	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365329)										
HK1647047-004	Anonymous	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	84.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365330)										
HK1647088-001	HC1 - M	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	107	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4365338)										
HK1647088-001	HC1 - M	EK057A: Nitrite as N	14797-65-0	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367033)										
HK1646422-006	Anonymous	EK067P: Total Phosphorus as P	----	0.5 mg/L	90.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367036)										
HK1647088-010	LFT2 - M - DUP	EK067P: Total Phosphorus as P	----	0.5 mg/L	92.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4365904)										
HK1647039-001	Anonymous	EG020: Arsenic	7440-38-2	100 µg/L	82.4	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	96.5	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	93.1	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	89.4	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	88.8	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	96.7	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	91.8	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	90.8	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	89.6	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4365906)										
HK1647088-017	TW1 - M	EG020: Arsenic	7440-38-2	100 µg/L	80.8	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	102	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	90.0	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	88.9	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	93.4	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	95.0	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	91.3	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	87.8	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	96.9	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4368966)										
HK1646619-002	Anonymous	EP026: Chemical Oxygen Demand	----	20 mg/L	83.5	----	75	125	----	----

Matrix: WATER

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report										
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP: Aggregate Organics (QC Lot: 4370111)										
HK1647088-010	LFT2 - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	90.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4370462)										
HK1647088-019	TW2A - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	96.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1647379
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: a.choi@fugro.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 24-NOV-2016
Order number	: 0080/16			Issue Date	: 08-DEC-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	General Manager	Inorganics
Ng Sin Kou, May	Assistant Laboratory Manager	Microbiology

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 24-NOV-2016 to 08-DEC-2016.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1647379

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 16:35. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]
				HK1647379-001	HK1647379-002	HK1647379-003	HK1647379-004	HK1647379-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	14.4	14.1	6.4	7.0	18.8
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.111	0.111	0.993	1.01	7.58
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.006	0.007	0.074	0.076	0.082
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	0.245	0.240	0.616	0.615	0.359
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	0.26	0.27	1.67	1.79	8.10
EK067P: Total Phosphorus as P	----	0.02	mg/L	0.10	0.09	0.31	0.30	0.91
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.046	0.043	0.082	0.081	0.657
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	9	10	19	20	29
EP030: Biochemical Oxygen Demand	----	1	mg/L	1	2	10	10	6
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	8	3	2	4	5
EG020: Lead	7439-92-1	1	µg/L	2	1	<1	<1	2
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	1	1	<1
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	26	56	53	17	28
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	13000	15000	24000	29000	460

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647379-006**	**HK1647379-007**	**HK1647379-008**	**HK1647379-009**	**HK1647379-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**17.7**	**5.0**	**6.8**	**21.0**	**22.9**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**7.62**	**8.65**	**8.52**	**6.04**	**6.18**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.082**	**0.257**	**0.259**	**0.058**	**0.060**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.345**	**0.681**	**0.679**	**0.252**	**0.261**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**8.38**	**8.69**	**8.62**	**8.73**	**8.53**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.91**	**0.85**	**0.84**	**2.00**	**2.04**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.665**	**0.652**	**0.656**	**1.31**	**1.35**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**29**	**20**	**18**	**25**	**35**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**6**	**7**	**8**	**13**	**12**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**5**	**3**	**3**	**36**	**49**
EG020: Lead	7439-92-1	1	µg/L		**2**	<1	<1	**4**	**5**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**132**	**549**	**49**	**96**	**136**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**510**	**140000**	**110000**	**23000**	**17000**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647379-011**	**HK1647379-012**	**HK1647379-013**	**HK1647379-014**	**HK1647379-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**58.4**	**62.2**	**57.4**	**53.7**	**7.9**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.043**	**0.047**	**1.52**	**1.50**	**1.62**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	**0.002**	**0.173**	**0.171**	**0.134**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.907**	**0.959**	**0.736**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.17**	**3.13**	**3.36**	**3.05**	**1.79**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.24**	**0.24**	**2.11**	**2.16**	**1.03**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.002**	**0.002**	**1.14**	**1.15**	**0.856**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**86**	**88**	**24**	**28**	**10**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**20**	**22**	**12**	**10**	**4**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	**2**	**2**	<1
EG020: Copper	7440-50-8	1	µg/L		**6**	**6**	**34**	**37**	**10**
EG020: Lead	7439-92-1	1	µg/L		**3**	**3**	**2**	**4**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	**1**	**1**	**1**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**50**	**33**	**323**	**274**	**199**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**1600**	**1700**	**15000**	**12000**	**6400**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]	[24-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647379-016**	**HK1647379-017**	**HK1647379-018**	**HK1647379-019**	**HK1647379-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**6.4**	**3.8**	**2.3**	**8.0**	**7.1**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**1.58**	**0.035**	**0.045**	**0.044**	**0.042**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.130**	**0.002**	**0.006**	**0.007**	**0.004**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.749**	**0.078**	**0.072**	**0.052**	**0.052**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**1.86**	**0.17**	**0.16**	**0.17**	**0.17**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**1.02**	**0.03**	**0.03**	**0.04**	**0.03**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.850**	**0.006**	**0.007**	**0.008**	**0.009**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**12**	**5**	**5**	**4**	**4**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**4**	<1	<1	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		**1**	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**8**	**2**	**2**	**3**	**3**
EG020: Lead	7439-92-1	1	µg/L		**2**	<1	<1	<1	<1
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**274**	**49**	**30**	**24**	**27**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**7000**	**3100**	**2400**	**1900**	**2300**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4367385)								
HK1647379-002	HC1 - M - DUP	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	14.1	12.8	9.1
HK1647379-012	LFT3 - M - DUP	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	62.2	62.8	1.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367024)								
HK1647379-002	HC1 - M - DUP	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	0.007	0.008	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367036)								
HK1647088-010	Anonymous	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	1.28	1.24	3.2
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367038)								
HK1647379-001	HC1 - M	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	0.10	0.10	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367044)								
HK1646904-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	0.38	0.40	5.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367048)								
HK1647379-011	LFT3 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.002	mg/L	0.002	0.002	0.0
EG: Metals and Major Cations (QC Lot: 4367465)								
HK1647213-002	Anonymous	**EG020: Cadmium**	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	67	68	1.5
		EG020: Lead	7439-92-1	1	µg/L	1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	6	6	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	90	90	0.0
HK1647379-003	HC2 -M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	2	3	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	53	44	18.3
EG: Metals and Major Cations (QC Lot: 4367466)								
HK1647379-014	SSNV1 - M - DUP	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	2	2	0.0
		EG020: Copper	7440-50-8	1	µg/L	37	37	0.0
		EG020: Lead	7439-92-1	1	µg/L	4	4	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	2	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4367466) - Continued								
HK1647379-014	SSNV1 - M - DUP	**EG020: Arsenic**	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	274	265	3.3
EP: Aggregate Organics (QC Lot: 4370462)								
HK1647088-019	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	6	6	0.0
EP: Aggregate Organics (QC Lot: 4371908)								
HK1647379-010	LFT2 - M - DUP	**EP026: Chemical Oxygen Demand**	----	2	mg/L	35	35	0.0
EP: Aggregate Organics (QC Lot: 4373505)								
HK1647577-001	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	55	53	4.6

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4367385)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	96.0	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367024)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	102	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367036)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	94.8	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367038)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.3	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367044)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.5	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367045)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.0	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367048)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	----	96	106	----	----
EG: Metals and Major Cations (QC Lot: 4367465)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	89.0	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	89.5	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	98.4	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	104	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	104	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	90.5	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	89.3	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	91.2	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	104	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 4367466)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	100	----	79	109	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4367466) - Continued											
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	88.5	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	95.0	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	98.6	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	98.1	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	86.8	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	91.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	89.2	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	110	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4367499)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	93.3	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4370462)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	98.0	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4371908)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	92.5	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4373505)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	98.5	----	85	107	----	----
				----	200 mg/L	99.5	----	91	105	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367024)										
HK1647379-002	HC1 - M - DUP	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	111	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367036)										
HK1647088-010	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	92.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367038)										
HK1647379-001	HC1 - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367044)										
HK1646904-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367045)										
HK1647379-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	101	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4367048)										
HK1647379-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	99.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4367465)										
HK1647213-001	Anonymous	**EG020: Arsenic**	7440-38-2	100 µg/L	90.1	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	88.6	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	115	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	# Not Determined	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	84.0	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	103	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	# Not Determined	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	96.3	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	91.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4367466)										
HK1647379-013	SSNV1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	93.1	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	86.7	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	----	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	101	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	97.3	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	82.4	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	115	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	94.4	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	83.3	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4370462)										
HK1647088-019	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	96.5	----	75	125	----	----

Matrix: WATER

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report										
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP: Aggregate Organics (QC Lot: 4371908)										
HK1647379-018	TW1 - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	91.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4373505)										
HK1647185-001	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	93.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1647185
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 28-NOV-2016
Order number	: 0080/16			Issue Date	: 12-DEC-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 28-NOV-2016 to 09-DEC-2016.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1647185

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 09:00. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]
				HK1647185-001	HK1647185-002	HK1647185-003	HK1647185-004	HK1647185-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	8.3	9.1	9.4	8.0	16.1
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.135	0.133	2.10	2.13	9.28
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.021	0.021	0.112	0.115	0.079
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	0.402	0.420	0.543	0.520	0.273
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	0.41	0.47	3.96	3.84	11.5
EK067P: Total Phosphorus as P	----	0.02	mg/L	0.11	0.11	0.26	0.23	0.95
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.065	0.062	0.136	0.140	0.705
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	7	6	18	18	34
EP030: Biochemical Oxygen Demand	----	1	mg/L	<1	<1	4	4	5
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	3	4	2	2	5
EG020: Lead	7439-92-1	1	µg/L	4	4	2	2	3
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	2	2	2
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	32	32	26	26	48
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	30000	26000	230000	400000	670

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647185-006**	**HK1647185-007**	**HK1647185-008**	**HK1647185-009**	**HK1647185-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**14.3**	**9.1**	**6.9**	**33.7**	**33.2**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**9.05**	**2.21**	**2.21**	**4.20**	**4.07**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.083**	**0.180**	**0.177**	**0.101**	**0.117**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.272**	**0.833**	**0.825**	**0.537**	**0.543**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**11.7**	**3.58**	**3.53**	**5.72**	**5.79**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.95**	**0.38**	**0.40**	**1.19**	**1.22**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.708**	**0.254**	**0.255**	**0.822**	**0.781**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**34**	**15**	**15**	**25**	**30**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**5**	**3**	**3**	**5**	**5**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**6**	**4**	**4**	**57**	**52**
EG020: Lead	7439-92-1	1	µg/L		**3**	**2**	**2**	**11**	**10**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	**1**	**1**	**2**	**2**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**56**	**42**	**38**	**163**	**169**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**800**	**46000**	**69000**	**18000**	**44000**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647185-011**	**HK1647185-012**	**HK1647185-013**	**HK1647185-014**	**HK1647185-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**80.0**	**85.2**	**11.3**	**12.8**	**14.5**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.045**	**0.046**	**5.98**	**5.91**	**1.42**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.248**	**0.245**	**0.200**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**1.13**	**1.08**	**0.796**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.80**	**3.62**	**7.78**	**7.26**	**2.76**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.24**	**0.25**	**1.34**	**1.34**	**0.78**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.004**	**0.002**	**1.12**	**1.13**	**0.605**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**88**	**87**	**16**	**16**	**13**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**24**	**22**	**4**	**4**	**3**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**9**	**8**	**7**	**7**	**10**
EG020: Lead	7439-92-1	1	µg/L		**8**	**7**	**2**	**4**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**58**	**48**	**62**	**64**	**50**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**1700**	**2300**	**57000**	**87000**	**130000**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]	[26-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647185-016**	**HK1647185-017**	**HK1647185-018**	**HK1647185-019**	**HK1647185-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**16.3**	**5.4**	**4.8**	**7.7**	**9.3**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**1.37**	**0.037**	**0.031**	**0.050**	**0.042**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.219**	**0.002**	**0.004**	**0.003**	**0.002**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.718**	**0.065**	**0.064**	**0.058**	**0.059**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.54**	**0.18**	**0.17**	**0.18**	**0.16**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.76**	**0.03**	**0.03**	**0.04**	**0.03**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.614**	**0.006**	**0.007**	**0.010**	**0.007**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**11**	**4**	**3**	**6**	**10**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**2**	<1	<1	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**14**	**1**	**1**	**1**	**2**
EG020: Lead	7439-92-1	1	µg/L		**5**	<1	<1	**2**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**59**	<10	<10	**13**	**25**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**90000**	**1400**	**1800**	**1300**	**1200**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4369535)								
HK1647185-002	HC1 - M - DUP	EA025: Suspended Solids (SS)	----	0.5	mg/L	9.1	9.0	0.0
HK1647185-012	LFT3 - M - DUP	EA025: Suspended Solids (SS)	----	0.5	mg/L	85.2	86.0	0.9
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4368925)								
HK1647185-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.065	0.066	2.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369444)								
HK1647185-001	HC1 - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.021	0.018	15.4
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369451)								
HK1647185-001	HC1 - M	EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.135	0.144	6.2
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369838)								
HK1647185-011	LFT3 - M	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.24	0.24	0.0
EG: Metals and Major Cations (QC Lot: 4369504)								
HK1647185-002	HC1 - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	4	4	0.0
		EG020: Lead	7439-92-1	1	µg/L	4	4	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	32	30	7.2
HK1647185-011	LFT3 - M	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	9	9	0.0
		EG020: Lead	7439-92-1	1	µg/L	8	7	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	58	51	11.9
EP: Aggregate Organics (QC Lot: 4373505)								
HK1647577-001	Anonymous	EP026: Chemical Oxygen Demand	----	2	mg/L	55	53	4.6
EP: Aggregate Organics (QC Lot: 4375633)								
HK1647185-008	LFT1 - M - DUP	EP026: Chemical Oxygen Demand	----	2	mg/L	15	16	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4369535)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	106	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4368925)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	102	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369444)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	93.2	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369451)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.8	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369838)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.1	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4369504)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	85.8	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	96.6	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	95.0	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	91.4	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	96.4	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	88.9	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	85.6	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	84.0	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	99.4	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4371440)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	102	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4373505)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	99.5	----	91	105	----	----
				----	20 mg/L	98.5	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4375633)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	--	----	91	105	----	----
				----	20 mg/L	102	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4368925)										
HK1647185-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	99.3	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369444)										
HK1647185-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369451)										
HK1647185-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	97.9	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369838)										
HK1647185-011	LFT3 - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	96.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4369504)										
HK1647185-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	86.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	97.0	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	94.2	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	88.8	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	93.3	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	87.1	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	84.3	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	82.8	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	83.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4373505)										
HK1647185-001	HC1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	93.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4375633)										
HK1647185-013	SSNV1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	88.0	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1647191
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 28-NOV-2016
Order number	: 0080/16			Issue Date	: 12-DEC-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 28-NOV-2016 to 12-DEC-2016.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1647191

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 16:10. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]
				HK1647191-001	HK1647191-002	HK1647191-003	HK1647191-004	HK1647191-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	6.7	7.6	339	339	32.5
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.167	0.163	1.94	2.01	7.07
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.021	0.020	0.006	0.005	0.096
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	0.351	0.348	<0.002	<0.002	0.559
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	0.73	0.72	65.7	64.0	10.8
EK067P: Total Phosphorus as P	----	0.02	mg/L	0.11	0.11	8.97	8.96	0.81
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.067	0.061	1.15	1.22	0.471
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	4	4	649	646	38
EP030: Biochemical Oxygen Demand	----	1	mg/L	<1	<1	254	255	6
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	2	1	<1
EG020: Copper	7440-50-8	1	µg/L	2	2	26	26	5
EG020: Lead	7439-92-1	1	µg/L	<1	<1	8	2	4
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	14	13	2
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	<10	<10	112	91	50
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	13000	15000	780000	810000	2300

Sub-Matrix: **WATER**			*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
			Client sampling date / time	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*	**HK1647191-006**	**HK1647191-007**	**HK1647191-008**	**HK1647191-009**	**HK1647191-010**
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	**35.4**	**2.0**	**1.6**	**15.6**	**15.7**
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	**7.04**	**1.64**	**1.66**	**3.12**	**3.23**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	**0.098**	**0.074**	**0.074**	**0.095**	**0.100**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	**0.551**	**0.761**	**0.754**	**0.446**	**0.442**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	**10.4**	**4.58**	**5.12**	**5.16**	**5.49**
EK067P: Total Phosphorus as P	----	0.02	mg/L	**0.84**	**0.35**	**0.36**	**1.08**	**1.09**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	**0.480**	**0.229**	**0.229**	**0.852**	**0.858**
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	**37**	**15**	**14**	**14**	**15**
EP030: Biochemical Oxygen Demand	----	1	mg/L	**6**	**3**	**2**	**4**	**4**
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	**5**	**2**	**3**	**29**	**28**
EG020: Lead	7439-92-1	1	µg/L	**4**	**1**	**1**	**5**	**5**
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	**2**	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	**51**	**23**	**27**	**77**	**90**
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	**4000**	**15000**	**26000**	**8600**	**7700**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647191-011**	**HK1647191-012**	**HK1647191-013**	**HK1647191-014**	**HK1647191-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**68.2**	**62.0**	**8.8**	**7.4**	**7.8**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.037**	**0.041**	**1.41**	**1.38**	**1.35**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.152**	**0.154**	**0.178**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**0.828**	**0.820**	**1.12**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**4.72**	**4.83**	**2.51**	**2.59**	**3.11**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.24**	**0.24**	**0.73**	**0.72**	**0.78**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.005**	**0.002**	**0.560**	**0.568**	**0.596**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**82**	**77**	**9**	**10**	**9**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**22**	**22**	**3**	**3**	**3**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**6**	**6**	**6**	**6**	**5**
EG020: Lead	7439-92-1	1	µg/L		**6**	**6**	**3**	**3**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**27**	**28**	**54**	**51**	**129**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**2500**	**2400**	**8900**	**12000**	**8800**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]	[28-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647191-016**	**HK1647191-017**	**HK1647191-018**	**HK1647191-019**	**HK1647191-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**9.3**	**1.4**	**1.6**	**4.5**	**3.9**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**1.34**	**0.041**	**0.050**	**0.037**	**0.042**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.175**	<0.002	**0.003**	**0.002**	<0.002
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**1.12**	**0.058**	**0.075**	**0.036**	**0.039**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.85**	**0.18**	**0.34**	**0.26**	**0.20**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.77**	**0.03**	**0.03**	**0.05**	**0.05**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.603**	**0.010**	**0.010**	**0.009**	**0.009**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**9**	**4**	**4**	**2**	<2
EP030: Biochemical Oxygen Demand	----	1	mg/L		**3**	<1	**2**	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**5**	<1	<1	<1	<1
EG020: Lead	7439-92-1	1	µg/L		**4**	<1	<1	<1	<1
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	<1	<1	**1**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**52**	<10	**20**	<10	<10
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**9600**	**1600**	**2300**	**1100**	**1200**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4369541)								
HK1647191-001	HC1 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	6.7	7.2	7.4
HK1647191-011	LFT3 - M	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	68.2	73.0	6.8
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4368926)								
HK1647185-011	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.002	mg/L	0.004	0.005	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369447)								
HK1647185-011	Anonymous	**EK057A: Nitrite as N**	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369452)								
HK1647191-002	HC1 - M - DUP	**EK055K: Ammonia as N**	7664-41-7	0.025	mg/L	0.163	0.162	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369840)								
HK1647191-010	LFT2 - M - DUP	**EK067P: Total Phosphorus as P**	----	0.02	mg/L	1.09	1.09	0.0
EG: Metals and Major Cations (QC Lot: 4369505)								
HK1647191-002	HC1 - M - DUP	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	2	2	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
HK1647191-011	LFT3 - M	**EG020: Cadmium**	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	6	6	0.0
		EG020: Lead	7439-92-1	1	µg/L	6	6	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	27	29	6.4
EP: Aggregate Organics (QC Lot: 4375633)								
HK1647185-008	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	15	16	0.0
EP: Aggregate Organics (QC Lot: 4375635)								
HK1647185-018	Anonymous	**EP026: Chemical Oxygen Demand**	----	2	mg/L	3	3	0.0
EP: Aggregate Organics (QC Lot: 4375639)								
HK1647191-013	SSNV1 - M	**EP026: Chemical Oxygen Demand**	----	2	mg/L	9	10	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method Blank (MB) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4369541)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	108	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4368926)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	102	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369447)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	96.2	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369452)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	95.8	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369840)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.3	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4369505)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	95.4	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	99.8	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	100	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	104	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	102	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	99.6	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	103	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	88.7	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	105	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4371448)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	99.8	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4375633)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	--	----	91	105	----	----
				----	20 mg/L	102	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4375635)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	--	----	91	105	----	----
				----	20 mg/L	101	----	85	107	----	----
EP: Aggregate Organics (QC Lot: 4375639)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	88.5	----	85	107	----	----
				----	200 mg/L	99.1	----	91	105	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4368926)										
HK1647185-011	Anonymous	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	96.8	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369447)										
HK1647185-011	Anonymous	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369452)										
HK1647191-002	HC1 - M - DUP	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	99.8	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4369840)										
HK1647191-010	LFT2 - M - DUP	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	94.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4369505)										
HK1647191-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	96.3	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	100	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	99.7	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	103	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	101	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	94.3	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	102	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	87.8	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	101	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4375633)										
HK1647185-013	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	88.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4375635)										
HK1647191-007	LFT1 - M	**EP026: Chemical Oxygen Demand**	----	20 mg/L	98.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4375639)										
HK1648678-001	Anonymous	**EP026: Chemical Oxygen Demand**	----	20 mg/L	95.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1647192
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 30-NOV-2016
Order number	: 0080/16			Issue Date	: 14-DEC-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 30-NOV-2016 to 13-DEC-2016.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1647192

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 15:50. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	*CAS Number*	*LOR*	*Unit*	*Client sample ID* / *Client sampling date / time*	HC1 - M [30-NOV-2016]	HC1 - M - DUP [30-NOV-2016]	HC2 -M [30-NOV-2016]	HC2 - M - DUP [30-NOV-2016]	HC3 - M [30-NOV-2016]
					HK1647192-001	**HK1647192-002**	**HK1647192-003**	**HK1647192-004**	**HK1647192-005**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**17.6**	**15.6**	**43.3**	**45.3**	**46.6**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.175**	**0.168**	**1.28**	**1.29**	**7.48**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.023**	**0.019**	**0.072**	**0.064**	**0.115**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.341**	**0.345**	**0.587**	**0.603**	**0.558**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**0.42**	**0.39**	**2.70**	**2.52**	**9.53**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.10**	**0.09**	**0.23**	**0.21**	**0.87**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.050**	**0.049**	**0.138**	**0.143**	**0.449**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**6**	**6**	**26**	**23**	**42**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**1**	<1	**7**	**7**	**7**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	**2**
EG020: Copper	7440-50-8	1	µg/L		**8**	**8**	**2**	**2**	**10**
EG020: Lead	7439-92-1	1	µg/L		**2**	**2**	<1	<1	**7**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	**1**	**3**	**3**	**3**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**20**	**24**	**18**	**19**	**66**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**6100**	**5500**	**230000**	**160000**	**1900**

Sub-Matrix: WATER				Client sample ID	HC3 - M - DUP	LFT1 - M	LFT1 - M - DUP	LFT2 - M	LFT2 - M - DUP
				Client sampling date / time	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]
Compound	CAS Number	LOR	Unit		HK1647192-006	HK1647192-007	HK1647192-008	HK1647192-009	HK1647192-010
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		42.8	7.0	7.2	20.4	19.4
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		7.67	2.78	2.82	6.32	6.29
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		0.116	0.154	0.150	0.077	0.073
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		0.559	0.900	0.915	0.294	0.297
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		10.0	3.81	3.66	7.57	7.64
EK067P: Total Phosphorus as P	----	0.02	mg/L		0.82	0.49	0.48	1.68	1.68
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		0.443	0.386	0.385	1.19	1.23
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		39	12	13	24	22
EP030: Biochemical Oxygen Demand	----	1	mg/L		7	3	4	7	7
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		8	8	5	51	45
EG020: Lead	7439-92-1	1	µg/L		6	3	1	10	8
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		3	2	2	2	2
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		62	63	33	143	118
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		2600	190000	250000	70000	85000

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647192-011**	**HK1647192-012**	**HK1647192-013**	**HK1647192-014**	**HK1647192-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**72.2**	**68.0**	**23.6**	**23.4**	**7.7**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.054**	**0.051**	**1.78**	**1.84**	**1.95**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.166**	**0.168**	**0.132**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**1.11**	**1.08**	**0.700**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.16**	**3.02**	**3.12**	**3.23**	**2.76**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.20**	**0.19**	**1.64**	**1.63**	**1.40**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.003**	**0.009**	**1.16**	**1.14**	**1.14**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**81**	**83**	**14**	**13**	**14**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**19**	**20**	**6**	**7**	**4**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**6**	**6**	**13**	**16**	**9**
EG020: Lead	7439-92-1	1	µg/L		**4**	**4**	**1**	**1**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**1**	<1	**1**	**1**	**1**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**25**	**40**	**102**	**118**	**74**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**4400**	**5200**	**77000**	**71000**	**190000**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]	[30-NOV-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647192-016**	**HK1647192-017**	**HK1647192-018**	**HK1647192-019**	**HK1647192-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**6.7**	**6.7**	**8.7**	**29.7**	**30.6**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**1.85**	**0.050**	**0.043**	**0.044**	**0.041**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.135**	<0.002	<0.002	<0.002	<0.002
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.708**	**0.051**	**0.051**	**0.080**	**0.080**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.70**	**0.15**	**0.13**	**0.24**	**0.22**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**1.42**	**0.02**	**0.02**	**0.06**	**0.05**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**1.08**	**0.010**	**0.007**	**0.009**	**0.009**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**14**	**3**	**8**	**3**	**8**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**4**	<1	<1	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**10**	**3**	**2**	**3**	**4**
EG020: Lead	7439-92-1	1	µg/L		**2**	<1	<1	**4**	**4**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	<1	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**81**	<10	<10	**16**	**18**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**220000**	**820**	**950**	**1300**	**1900**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4372775)								
HK1647192-001	HC1 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	17.6	16.7	4.8
HK1647192-011	LFT3 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	72.2	71.4	1.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372457)								
HK1647192-011	LFT3 - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372804)								
HK1647192-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.050	0.054	7.7
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372815)								
HK1647192-001	HC1 - M	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.10	0.10	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372847)								
HK1648301-002	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.24	0.23	4.2
EG: Metals and Major Cations (QC Lot: 4372779)								
HK1647192-002	HC1 - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	8	8	0.0
		EG020: Lead	7439-92-1	1	µg/L	2	1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	24	24	0.0
HK1647192-011	LFT3 - M	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	6	6	0.0
		EG020: Lead	7439-92-1	1	µg/L	4	4	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	25	25	0.0
EP: Aggregate Organics (QC Lot: 4376793)								
HK1647192-001	HC1 - M	EP026: Chemical Oxygen Demand	----	2	mg/L	6	6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4372775)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	95.5	----	85	115	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372457)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	96.6	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372804)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372815)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.2	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372847)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	----	93	109	----	----
EG: Metals and Major Cations (QC Lot: 4372779)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	96.1	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	97.4	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	100	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	105	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	99.4	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	106	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	100	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	90.6	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	94.1	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4372081)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	104	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4376793)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	20 mg/L	93.0	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372457)										
HK1647192-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	101	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372804)										
HK1647192-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	98.9	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372815)										
HK1647192-001	HC1 - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4372847)										
HK1648301-002	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	90.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4372779)										
HK1647192-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	96.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	97.0	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	98.3	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	101	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	95.7	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	103	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	95.8	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	87.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	87.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4376793)										
HK1647192-010	LFT2 - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	89.5	----	75	125	----	----

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: MATERIALAB CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR ANDY CHOI	Contact	: Fung Lim Chee, Richard	Work Order	: HK1647194
Address	: RM 723 & 725 7/F, BLOCK B PROFIT INDUSTRIAL BUILDING, NO. 1-15 KWAI FUNG CRESCENT, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 3565 4374	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DRAINAGE IMPROVEMENT WORKS IN YUEN LONG STAGE 1 - INVESTIGATION DESIGN AND CONSTRUCTION	Quote number	: ----	Date Samples Received	: 02-DEC-2016
Order number	: 0080/16			Issue Date	: 16-DEC-2016
C-O-C number	: ----			No. of samples received	: 20
Site	: ----			No. of samples analysed	: 20

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**
Ng Sin Kou, May	**Assistant Laboratory Manager**	**Microbiology**

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 02-DEC-2016 to 16-DEC-2016.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1647194

Project Name: Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction (Agreement No.: CB 22/2013 (DS))

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.

Sample(s) arrived in the laboratory at 16:35. Microbiological sample(s), in 125mL plastic bottle labelled sterile, with addition of sodium thiosulfate solution.

NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

The accredited LOR for Biochemical Oxygen Demand, Nitrite, Nitrate, Reactive Phosphorus & Total Kjeldahl Nitrogen are 2mg/L, 0.005mg/L, 0.005mg/L, 0.01mg/L & 0.1mg/L respectively. The results reported below the accredited LOR reported are for reference only.

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: HC1 - M	HC1 - M - DUP	HC2 -M	HC2 - M - DUP	HC3 - M
				Client sampling date / time: [02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]
				HK1647194-001	HK1647194-002	HK1647194-003	HK1647194-004	HK1647194-005
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	0.5	mg/L	3.2	2.8	72.0	76.8	41.2
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.124	0.113	1.51	1.53	7.18
EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.020	0.020	0.079	0.075	0.174
EK058A: Nitrate as N	14797-55-8	0.002	mg/L	0.311	0.314	0.573	0.597	0.782
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L	0.27	0.30	13.6	14.0	10.8
EK067P: Total Phosphorus as P	----	0.02	mg/L	0.08	0.08	2.43	2.46	0.90
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.048	0.050	0.680	0.646	0.280
EP: Aggregate Organics								
EP026: Chemical Oxygen Demand	----	2	mg/L	<2	<2	339	330	57
EP030: Biochemical Oxygen Demand	----	1	mg/L	<1	1	63	62	12
EG: Metals and Major Cations - Total								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L	<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L	1	<1	12	12	9
EG020: Lead	7439-92-1	1	µg/L	<1	<1	2	2	4
EG020: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L	<1	<1	10	9	3
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L	<10	<10	51	47	57
EM: Microbiological Testing								
EM002A: E. coli	----	1	CFU/100mL	2900	3300	180000	210000	6600

Sub-Matrix: **WATER**				*Client sample ID*	**HC3 - M - DUP**	**LFT1 - M**	**LFT1 - M - DUP**	**LFT2 - M**	**LFT2 - M - DUP**
				Client sampling date / time	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647194-006**	**HK1647194-007**	**HK1647194-008**	**HK1647194-009**	**HK1647194-010**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**44.8**	**11.0**	**9.5**	**32.3**	**29.7**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**7.30**	**3.41**	**3.41**	**5.58**	**5.58**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.169**	**0.243**	**0.248**	**0.113**	**0.119**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.774**	**1.02**	**1.03**	**0.358**	**0.349**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**10.6**	**3.53**	**3.59**	**7.22**	**7.24**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.90**	**0.54**	**0.54**	**1.51**	**1.56**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.281**	**0.376**	**0.374**	**1.14**	**1.12**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**60**	**9**	**10**	**21**	**20**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**12**	**4**	**4**	**6**	**5**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**9**	**2**	**4**	**56**	**55**
EG020: Lead	7439-92-1	1	µg/L		**4**	**2**	**3**	**2**	**2**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		**2**	**1**	**2**	**2**	**2**
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**66**	**19**	**32**	**160**	**166**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**7000**	**3700**	**3100**	**26000**	**22000**

Sub-Matrix: **WATER**				*Client sample ID*	**LFT3 - M**	**LFT3 - M - DUP**	**SSNV1 - M**	**SSNV1 - M - DUP**	**SSNV2 - M**
				Client sampling date / time	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647194-011**	**HK1647194-012**	**HK1647194-013**	**HK1647194-014**	**HK1647194-015**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**64.4**	**61.6**	**35.9**	**33.8**	**7.9**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**0.086**	**0.074**	**1.45**	**1.56**	**1.44**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	**0.185**	**0.189**	**0.147**
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		<0.002	<0.002	**1.05**	**1.03**	**0.748**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**3.01**	**2.98**	**3.51**	**3.65**	**2.36**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.20**	**0.20**	**1.73**	**1.70**	**0.96**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.007**	**0.007**	**0.882**	**0.900**	**0.731**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**94**	**95**	**18**	**16**	**9**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**18**	**18**	**9**	**10**	**3**
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**9**	**9**	**16**	**20**	**7**
EG020: Lead	7439-92-1	1	µg/L		**4**	**4**	**2**	**2**	**1**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	**2**	<1	**1**	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**64**	**57**	**147**	**177**	**53**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**6400**	**5900**	**200000**	**170000**	**1500**

Sub-Matrix: **WATER**				*Client sample ID*	**SSNV2 - M - DUP**	**TW1 - M**	**TW1 - M - DUP**	**TW2A - M**	**TW2A - M - DUP**
				Client sampling date / time	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]	[02-DEC-2016]
Compound	*CAS Number*	*LOR*	*Unit*		**HK1647194-016**	**HK1647194-017**	**HK1647194-018**	**HK1647194-019**	**HK1647194-020**
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	0.5	mg/L		**9.3**	**2.8**	**4.1**	**4.4**	**5.4**
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.025	mg/L		**1.51**	**0.032**	**0.045**	**0.048**	**0.050**
EK057A: Nitrite as N	14797-65-0	0.002	mg/L		**0.152**	**0.004**	**0.002**	<0.002	<0.002
EK058A: Nitrate as N	14797-55-8	0.002	mg/L		**0.735**	**0.042**	**0.050**	**0.033**	**0.033**
EK061P: Total Kjeldahl Nitrogen as N	----	0.05	mg/L		**2.21**	**0.11**	**0.10**	**0.09**	**0.09**
EK067P: Total Phosphorus as P	----	0.02	mg/L		**0.98**	**0.03**	**0.03**	**0.02**	**0.02**
EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L		**0.733**	**0.010**	**0.010**	**0.010**	**0.010**
EP: Aggregate Organics									
EP026: Chemical Oxygen Demand	----	2	mg/L		**11**	**4**	**5**	**3**	**3**
EP030: Biochemical Oxygen Demand	----	1	mg/L		**3**	<1	<1	<1	<1
EG: Metals and Major Cations - Total									
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L		<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	1	µg/L		<1	<1	<1	<1	<1
EG020: Copper	7440-50-8	1	µg/L		**6**	**6**	**3**	**4**	**2**
EG020: Lead	7439-92-1	1	µg/L		**1**	**3**	**3**	**2**	**1**
EG020: Mercury	7439-97-6	1	µg/L		<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	µg/L		<1	**4**	<1	<1	<1
EG020: Silver	7440-22-4	1	µg/L		<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	10	µg/L		**46**	**14**	**15**	**20**	**14**
EM: Microbiological Testing									
EM002A: E. coli	----	1	CFU/100mL		**1800**	**1100**	**1300**	**2600**	**3000**

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4373709)								
HK1647194-001	HC1 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.2	2.4	25.8
HK1647194-011	LFT3 - M	EA025: Suspended Solids (SS)	----	0.5	mg/L	64.4	62.5	3.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373866)								
HK1647194-001	HC1 - M	EK057A: Nitrite as N	14797-65-0	0.002	mg/L	0.020	0.019	5.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373873)								
HK1647194-001	HC1 - M	EK055K: Ammonia as N	7664-41-7	0.025	mg/L	0.124	0.130	5.5
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373877)								
HK1647194-001	HC1 - M	EK071K: Reactive Phosphorus as P	14265-44-2	0.002	mg/L	0.048	0.051	6.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4374057)								
HK1647194-001	HC1 - M	EK067P: Total Phosphorus as P	----	0.02	mg/L	0.08	0.08	0.0
EG: Metals and Major Cations (QC Lot: 4373730)								
HK1647194-002	HC1 - M - DUP	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
HK1647194-011	LFT3 - M	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Chromium	7440-47-3	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	9	8	0.0
		EG020: Lead	7439-92-1	1	µg/L	4	4	0.0
		EG020: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	64	63	0.0
EP: Aggregate Organics (QC Lot: 4378118)								
HK1647194-001	HC1 - M	EP026: Chemical Oxygen Demand	----	2	mg/L	<2	<2	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4373709)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20.0 mg/L	102	----	85	115	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373866)											
EK057A: Nitrite as N	14797-65-0	0.005	mg/L	<0.005	0.05 mg/L	102	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373873)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	96.1	----	93	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373877)											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	100	----	96	106	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4374057)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	95.6	----	93	103	----	----
EG: Metals and Major Cations (QC Lot: 4373730)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	93.6	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	95.6	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	97.8	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	99.5	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	100	----	80	110	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	90.0	----	75	121	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	94.2	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	91.6	----	78	104	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	96.6	----	76	114	----	----
EP: Aggregate Organics (QC Lot: 4373880)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	102	----	84	120	----	----
EP: Aggregate Organics (QC Lot: 4378118)											
EP026: Chemical Oxygen Demand	----	2	mg/L	----	200 mg/L	93.5	----	91	105	----	----
				----	20 mg/L	94.5	----	85	107	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373866)										
HK1647194-001	HC1 - M	**EK057A: Nitrite as N**	14797-65-0	0.5 mg/L	101	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373873)										
HK1647194-001	HC1 - M	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	112	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4373877)										
HK1647194-001	HC1 - M	**EK071K: Reactive Phosphorus as P**	14265-44-2	0.5 mg/L	98.6	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4374057)										
HK1647194-001	HC1 - M	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	94.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4373730)										
HK1647194-001	HC1 - M	**EG020: Arsenic**	7440-38-2	100 µg/L	94.4	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	96.8	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	98.0	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	98.6	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	98.5	----	75	125	----	----
		EG020: Mercury	7439-97-6	2 µg/L	90.5	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	99.9	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	90.3	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	91.5	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4378118)										
HK1647194-010	LFT2 - M - DUP	**EP026: Chemical Oxygen Demand**	----	20 mg/L	85.0	----	75	125	----	----

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MaterialLab

Appendix E

Baseline Water Quality Monitoring Results

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MaterialLab

Wet Season

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
HC1	10/11/2016	Fine	15:30	0.1	M	0.05	1	7.42	7.41	23.77	23.78	95.8	95.6	8.08	8.07	3.6	3.6	0.06	0.06	10	10
HC1	10/11/2016	Fine	15:30	0.1	M	0.05	2	7.40		23.79		95.3		8.05		3.5		0.06		9	
HC1	10/13/2016	Fine	11:36	0.15	M	0.075	1	7.53	7.48	23.84	23.84	95.1	95.3	8.03	8.05	10.5	10.4	0.06	0.06	36	37
HC1	10/13/2016	Fine	11:36	0.15	M	0.075	2	7.42		23.83		95.5		8.06		10.3		0.06		38	
HC1	10/15/2016	Fine	12:04	0.15	M	0.075	1	7.36	7.37	24.78	24.78	91.0	91.1	7.55	7.56	3.4	3.3	0.06	0.06	22	23
HC1	10/15/2016	Fine	12:04	0.15	M	0.075	2	7.37		24.77		91.2		7.57		3.2		0.05		23	
HC1	10/17/2016	Fine	12:07	0.2	M	0.1	1	7.58	7.56	25.37	25.33	92.1	92.3	7.55	7.58	3.5	3.6	0.05	0.04	14	15
HC1	10/17/2016	Fine	12:07	0.2	M	0.1	2	7.54		25.29		92.5		7.61		3.7		0.02		15	
HC1	10/19/2016	Rainy	13:15	1	M	0.5	1	7.11	7.10	24.54	24.55	99.1	99.1	8.26	8.26	111.1	111.0	0.02	0.02	5	6
HC1	10/19/2016	Rainy	13:15	1	M	0.5	2	7.09		24.55		99.1		8.25		110.9		0.02		6	
HC1	10/22/2016	Cloudy	12:04	0.2	M	0.1	1	7.40	7.36	25.23	25.21	99.2	99.1	8.15	8.15	11.3	10.8	0.04	0.04	12	11
HC1	10/22/2016	Cloudy	12:04	0.2	M	0.1	2	7.31		25.18		98.9		8.15		10.2		0.04		10	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
HC2	10/11/2016	Fine	15:55	0.1	M	0.05	1	7.04	7.01	24.43	24.45	39.4	38.4	3.29	3.21	17.1	17.7	0.11	0.11	54	53
HC2	10/11/2016	Fine	15:55	0.1	M	0.05	2	6.97		24.47		37.3		3.12		18.2		0.11		52	
HC2	10/13/2016	Fine	11:49	0.05	M	0.025	1	7.16	7.07	24.99	25.00	48.6	46.3	4.01	3.81	15.9	15.8	0.11	0.11	20	19
HC2	10/13/2016	Fine	11:49	0.05	M	0.025	2	6.97		25.00		44.0		3.61		15.6		0.10		18	
HC2	10/15/2016	Fine	11:24	0.1	M	0.05	1	6.98	6.97	25.41	25.43	43.8	43.0	3.59	3.53	29.0	28.7	0.12	0.12	27	28
HC2	10/15/2016	Fine	11:24	0.1	M	0.05	2	6.96		25.45		42.1		3.46		28.4		0.12		28	
HC2	10/17/2016	Fine	11:34	0.1	M	0.05	1	7.15	7.14	26.33	26.35	42.5	42.4	3.42	3.41	17.2	17.5	0.11	0.11	12	13
HC2	10/17/2016	Fine	11:34	0.1	M	0.05	2	7.13		26.36		42.2		3.39		17.8		0.11		13	
HC2	10/19/2016	Rainy	13:26	0.9	M	0.45	1	6.97	6.93	24.81	24.82	96.8	96.8	8.03	8.02	121.3	123.0	0.03	0.03	6	6
HC2	10/19/2016	Rainy	13:26	0.9	M	0.45	2	6.89		24.83		96.8		8.01		124.6		0.03		5	
HC2	10/22/2016	Cloudy	12:30	0.15	M	0.075	1	7.36	7.34	25.78	25.80	89.2	89.2	7.27	7.26	9.1	9.5	0.07	0.07	20	20
HC2	10/22/2016	Cloudy	12:30	0.15	M	0.075	2	7.31		25.81		89.2		7.25		9.9		0.07		19	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
HC3	10/11/2016	Fine	16:15	0.7	M	0.35	1	8.77	8.79	27.23	27.23	204.2	207.5	16.20	16.46	41.4	41.1	0.14	0.14	NA	NA
HC3	10/11/2016	Fine	16:15	0.7	M	0.35	2	8.81		27.22		210.7		16.72		40.7		0.14		NA	
HC3	10/13/2016	Fine	12:08	0.8	M	0.4	1	7.97	8.00	26.25	26.24	133.4	131.9	10.76	10.68	47.6	47.7	0.15	0.15	NA	NA
HC3	10/13/2016	Fine	12:08	0.8	M	0.4	2	8.02		26.23		130.4		10.60		47.7		0.15		NA	
HC3	10/15/2016	Fine	12:22	0.6	M	0.3	1	8.35	8.35	28.27	28.26	182.0	182.2	14.17	14.19	29.5	29.6	0.14	0.15	NA	NA
HC3	10/15/2016	Fine	12:22	0.6	M	0.3	2	8.34		28.24		182.4		14.21		29.7		0.15		NA	
HC3	10/17/2016	Fine	12:23	0.6	M	0.3	1	8.46	8.45	28.78	28.77	183.4	183.7	14.16	14.19	35.8	35.6	0.15	0.15	NA	NA
HC3	10/17/2016	Fine	12:23	0.6	M	0.3	2	8.44		28.76		183.9		14.21		35.3		0.15		NA	
HC3	10/19/2016	Rainy	14:00	0.5	M	0.25	1	6.89	6.88	25.84	25.84	75.4	75.1	6.14	6.11	27.4	27.2	0.05	0.05	NA	NA
HC3	10/19/2016	Rainy	14:00	0.5	M	0.25	2	6.87		25.84		74.7		6.08		27.0		0.05		NA	
HC3	10/22/2016	Cloudy	12:56	0.5	M	0.25	1	7.17	7.16	29.48	29.48	80.0	80.1	6.10	6.10	23.4	24.0	0.07	0.07	NA	NA
HC3	10/22/2016	Cloudy	12:56	0.5	M	0.25	2	7.14		29.47		80.1		6.10		24.6		0.07		NA	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
LFT1	10/11/2016	Fine	14:15	0.1	M	0.05	1	6.87	6.86	24.92	24.95	70.2	70.5	5.81	5.83	1.8	1.9	0.08	0.08	9	9
LFT1	10/11/2016	Fine	14:15	0.1	M	0.05	2	6.85		24.98		70.8		5.85		2.0		0.07		9	
LFT1	10/13/2016	Fine	10:32	0.08	M	0.04	1	7.08	7.04	24.41	24.41	66.7	67.1	5.57	5.60	1.7	1.8	0.09	0.09	9	10
LFT1	10/13/2016	Fine	10:32	0.08	M	0.04	2	7.00		24.40		67.4		5.63		1.9		0.09		10	
LFT1	10/15/2016	Fine	10:40	0.15	M	0.075	1	7.03	7.01	25.42	25.44	70.8	70.8	5.81	5.80	5.5	5.6	0.08	0.08	13	14
LFT1	10/15/2016	Fine	10:40	0.15	M	0.075	2	6.99		25.46		70.7		5.79		5.7		0.08		14	
LFT1	10/17/2016	Fine	10:16	0.1	M	0.05	1	7.20	7.19	25.57	25.59	74.6	74.8	6.10	6.12	1.5	1.6	0.06	0.06	9	10
LFT1	10/17/2016	Fine	10:16	0.1	M	0.05	2	7.18		25.60		75.0		6.13		1.7		0.06		11	
LFT1	10/19/2016	Rainy	11:09	0.1	M	0.05	1	7.04	7.04	25.37	25.37	85.1	85.4	6.98	7.00	28.2	28.3	0.08	0.08	4	5
LFT1	10/19/2016	Rainy	11:09	0.1	M	0.05	2	7.04		25.37		85.6		7.02		28.4		0.08		5	
LFT1	10/22/2016	Cloudy	10:33	0.05	M	0.025	1	6.96	6.98	25.94	25.93	87.1	86.7	7.07	7.03	7.3	7.2	0.10	0.10	9	9
LFT1	10/22/2016	Cloudy	10:33	0.05	M	0.025	2	7.00		25.92		86.2		6.99		7.1		0.10		8	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
LFT2	10/11/2016	Fine	14:50	0.2	M	0.1	1	6.99	6.96	24.32	24.35	64.8	65.0	5.42	5.44	14.9	15.7	0.01	0.02	34	38
LFT2	10/11/2016	Fine	14:50	0.2	M	0.1	2	6.92		24.37		65.2		5.45		16.5		0.03		42	
LFT2	10/13/2016	Fine	11:07	0.3	M	0.15	1	7.09	7.05	24.52	24.53	65.4	67.0	5.45	5.53	10.7	10.8	0.08	0.08	34	33
LFT2	10/13/2016	Fine	11:07	0.3	M	0.15	2	7.01		24.53		68.5		5.60		10.8		0.08		32	
LFT2	10/15/2016	Fine	13:16	0.3	M	0.15	1	7.20	7.19	25.59	25.58	70.6	70.2	5.77	5.73	11.1	11.3	0.08	0.08	43	44
LFT2	10/15/2016	Fine	13:16	0.3	M	0.15	2	7.18		25.57		69.8		5.69		11.5		0.08		44	
LFT2	10/17/2016	Fine	11:09	0.15	M	0.075	1	7.47	7.46	26.12	26.13	66.2	65.3	5.35	5.28	13.1	13.3	0.11	0.11	52	51
LFT2	10/17/2016	Fine	11:09	0.15	M	0.075	2	7.45		26.13		64.3		5.20		13.5		0.11		50	
LFT2	10/19/2016	Rainy	11:53	0.2	M	0.1	1	7.00	6.96	24.76	24.78	88.6	88.8	7.35	7.36	29.5	29.0	0.06	0.06	5	5
LFT2	10/19/2016	Rainy	11:53	0.2	M	0.1	2	6.92		24.79		88.9		7.37		28.5		0.06		4	
LFT2	10/22/2016	Cloudy	11:08	0.35	M	0.175	1	7.10	7.08	25.63	25.65	85.4	85.2	6.96	6.95	9.0	9.2	0.03	0.04	17	17
LFT2	10/22/2016	Cloudy	11:08	0.35	M	0.175	2	7.05		25.67		85.0		6.94		9.3		0.04		16	

Note: 1. Depth Ave.: (Except E.coli) "Depth-averaged" is calculated by taking the arithmetic means for the reading of the surface, middle and bottom depths
2. ND: Not Detected
3. NA: Not Applicable

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
LFT3	10/11/2016	Fine	14:35	0.8	M	0.4	1	9.17	9.25	26.84	26.84	195.6	195.3	15.74	15.69	36.9	39.5	0.12	0.12	NA	NA
LFT3	10/11/2016	Fine	14:35	0.8	M	0.4	2	9.33		26.83		194.9		15.64		42.0		0.12		NA	
LFT3	10/13/2016	Fine	10:48	0.6	M	0.3	1	9.01	9.02	25.72	25.72	150.9	142.7	12.33	12.00	41.5	41.5	0.12	0.12	NA	NA
LFT3	10/13/2016	Fine	10:48	0.6	M	0.3	2	9.02		25.71		134.5		11.66		41.4		0.12		NA	
LFT3	10/15/2016	Fine	11:04	0.9	M	0.45	1	9.31	9.34	27.12	27.14	172.8	172.0	13.73	13.66	40.5	40.3	0.11	0.11	NA	NA
LFT3	10/15/2016	Fine	11:04	0.9	M	0.45	2	9.36		27.15		171.1		13.59		40.1		0.11		NA	
LFT3	10/17/2016	Fine	10:29	0.9	M	0.45	1	9.23	9.24	27.29	27.32	151.2	153.6	11.97	12.16	47.6	47.3	0.11	0.11	NA	NA
LFT3	10/17/2016	Fine	10:29	0.9	M	0.45	2	9.25		27.34		156.0		12.35		46.9		0.11		NA	
LFT3	10/19/2016	Rainy	11:36	1	M	0.5	1	8.60	8.62	25.79	25.78	111.5	110.1	9.08	8.98	36.1	36.3	0.09	0.09	NA	NA
LFT3	10/19/2016	Rainy	11:36	1	M	0.5	2	8.64		25.76		108.7		8.87		36.5		0.09		NA	
LFT3	10/22/2016	Cloudy	10:51	0.7	M	0.35	1	8.52	8.57	26.26	26.27	129.1	129.0	10.41	10.38	47.0	48.5	0.09	0.09	NA	NA
LFT3	10/22/2016	Cloudy	10:51	0.7	M	0.35	2	8.61		26.28		128.8		10.34		50.0		0.09		NA	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
SSNV1	10/11/2016	Fine	17:10	0.2	M	0.1	1	7.32	7.32	24.91	24.91	59.6	59.9	4.93	4.95	7.3	7.4	0.12	0.12	20	23
SSNV1	10/11/2016	Fine	17:10	0.2	M	0.1	2	7.31		24.90		60.1		4.97		7.4		0.12		25	
SSNV1	10/13/2016	Fine	14:08	0.05	M	0.025	1	7.05	6.99	27.51	27.56	79.6	79.3	6.28	6.25	2.1	2.3	0.07	0.07	24	24
SSNV1	10/13/2016	Fine	14:08	0.05	M	0.025	2	6.92		27.61		78.9		6.22		2.4		0.07		24	
SSNV1	10/15/2016	Fine	15:36	0.1	M	0.05	1	7.32	7.32	27.97	27.98	66.6	66.7	5.21	5.22	8.4	8.3	0.19	0.19	22	23
SSNV1	10/15/2016	Fine	15:36	0.1	M	0.05	2	7.31		27.99		66.8		5.22		8.2		0.19		24	
SSNV1	10/17/2016	Fine	14:07	0.1	M	0.05	1	6.93	6.95	26.49	26.49	55.9	55.3	4.50	4.45	2.9	3.1	0.07	0.07	25	26
SSNV1	10/17/2016	Fine	14:07	0.1	M	0.05	2	6.97		26.49		54.7		4.40		3.2		0.07		26	
SSNV1	10/19/2016	Rainy	14:57	0.3	M	0.15	1	7.51	7.51	25.23	25.23	89.9	89.9	7.39	7.39	23.4	23.1	0.15	0.15	7	7
SSNV1	10/19/2016	Rainy	14:57	0.3	M	0.15	2	7.50		25.23		89.9		7.39		22.7		0.15		7	
SSNV1	10/22/2016	Cloudy	13:47	0.1	M	0.05	1	7.35	7.27	27.49	27.52	95.0	94.8	7.49	7.48	6.3	6.3	0.05	0.05	20	20
SSNV1	10/22/2016	Cloudy	13:47	0.1	M	0.05	2	7.19		27.54		94.6		7.46		6.3		0.05		19	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
SSNV2	10/11/2016	Fine	16:50	0.8	M	0.4	1	6.89	6.88	24.82	24.82	50.5	50.3	4.19	4.17	3.8	4.0	0.16	0.17	NA	NA
SSNV2	10/11/2016	Fine	16:50	0.8	M	0.4	2	6.86		24.81		50.1		4.15		4.1		0.17		NA	
SSNV2	10/13/2016	Fine	13:51	0.6	M	0.3	1	7.04	6.91	26.15	26.15	60.9	61.5	4.93	4.97	1.9	2.0	0.06	0.07	NA	NA
SSNV2	10/13/2016	Fine	13:51	0.6	M	0.3	2	6.78		26.15		62.0		5.01		2.1		0.07		NA	
SSNV2	10/15/2016	Fine	15:08	0.3	M	0.15	1	6.96	6.95	27.15	27.17	58.7	58.6	4.66	4.65	2.9	2.7	0.07	0.07	24	25
SSNV2	10/15/2016	Fine	15:08	0.3	M	0.15	2	6.93		27.18		58.5		4.64		2.4		0.07		26	
SSNV2	10/17/2016	Fine	13:41	0.6	M	0.3	1	6.76	6.74	26.17	26.17	46.0	46.7	3.72	3.78	2.8	2.6	0.07	0.07	NA	NA
SSNV2	10/17/2016	Fine	13:41	0.6	M	0.3	2	6.72		26.16		47.3		3.83		2.4		0.07		NA	
SSNV2	10/19/2016	Rainy	14:40	1.3	M	0.65	1	7.32	7.30	25.27	25.27	91.0	91.1	7.48	7.49	33.5	33.7	0.04	0.04	NA	NA
SSNV2	10/19/2016	Rainy	14:40	1.3	M	0.65	2	7.27		25.26		91.2		7.50		33.9		0.04		NA	
SSNV2	10/22/2016	Cloudy	13:32	1	M	0.5	1	7.26	7.18	27.55	27.55	92.9	92.9	7.34	7.33	7.7	7.8	0.05	0.05	NA	NA
SSNV2	10/22/2016	Cloudy	13:32	1	M	0.5	2	7.10		27.54		92.8		7.31		7.9		0.05		NA	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
TW1	10/11/2016	Fine	13:45	0.1	M	0.05	1	6.88	6.85	23.76	23.75	96.8	97.0	8.19	8.21	3.9	3.9	0.05	0.05	40	42
TW1	10/11/2016	Fine	13:45	0.1	M	0.05	2	6.82		23.73		97.1		8.22		3.8		0.05		43	
TW1	10/13/2016	Fine	9:46	0.07	M	0.035	1	7.13	7.05	23.48	23.48	96.7	96.6	8.22	8.21	5.6	5.7	0.03	0.04	38	38
TW1	10/13/2016	Fine	9:46	0.07	M	0.035	2	6.97		23.48		96.4		8.19		5.8		0.04		37	
TW1	10/15/2016	Fine	9:44	0.1	M	0.05	1	6.96	6.95	24.60	24.61	98.2	98.2	8.18	8.18	3.2	3.3	0.04	0.04	38	38
TW1	10/15/2016	Fine	9:44	0.1	M	0.05	2	6.94		24.61		98.2		8.17		3.3		0.04		37	
TW1	10/17/2016	Fine	9:36	0.1	M	0.05	1	7.59	7.56	24.57	24.58	96.8	97.0	8.06	8.07	4.6	4.7	0.04	0.04	42	43
TW1	10/17/2016	Fine	9:36	0.1	M	0.05	2	7.53		24.58		97.1		8.08		4.8		0.04		44	
TW1	10/19/2016	Rainy	10:15	0.15	M	0.075	1	6.84	6.85	24.54	24.55	91.7	91.9	7.64	7.66	16.2	16.3	0.04	0.04	5	6
TW1	10/19/2016	Rainy	10:15	0.15	M	0.075	2	6.86		24.56		92.0		7.67		16.3		0.04		6	
TW1	10/22/2016	Cloudy	9:35	0.1	M	0.05	1	6.82	6.81	24.68	24.69	91.4	91.5	7.59	7.60	4.7	4.8	0.04	0.04	10	10
TW1	10/22/2016	Cloudy	9:35	0.1	M	0.05	2	6.79		24.69		91.6		7.60		4.8		0.04		10	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
TW2A	10/19/2016	Rainy	10:34	0.5	M	0.25	1	6.77	6.75	24.49	24.50	90.1	90.3	7.51	7.53	16.7	16.8	0.04	0.04	5	6
TW2A	10/19/2016	Rainy	10:34	0.5	M	0.25	2	6.73		24.51		90.5		7.54		16.9		0.04		6	
TW2A	10/22/2016	Cloudy	9:50	0.4	M	0.2	1	6.89	6.85	24.81	24.82	92.8	93.0	7.69	7.71	5.7	5.9	0.04	0.04	13	13
TW2A	10/22/2016	Cloudy	9:50	0.4	M	0.2	2	6.81		24.82		93.2		7.72		6.0		0.04		12	
TW2A	10/24/2016	Fine	9:37	0.35	M	0.175	1	6.90	6.86	24.91	24.89	91.2	91.4	7.55	7.56	5.3	6.6	0.04	0.04	15	15
TW2A	10/24/2016	Fine	9:37	0.35	M	0.175	2	6.82		24.86		91.5		7.57		7.8		0.04		15	
TW2A	10/26/2016	Fine	15:00	0.35	M	0.175	1	6.80	6.77	25.80	25.79	91.0	91.1	7.41	7.42	4.8	5.6	0.04	0.04	25	24
TW2A	10/26/2016	Fine	15:00	0.35	M	0.175	2	6.74		25.78		91.2		7.42		6.3		0.04		23	
TW2A	10/28/2016	Fine	9:40	0.3	M	0.15	1	6.12	6.14	24.35	24.35	105.2	105.3	8.80	8.80	3.2	3.4	0.04	0.04	20	20
TW2A	10/28/2016	Fine	9:40	0.3	M	0.15	2	6.15		24.34		105.3		8.80		3.5		0.03		19	
TW2A	10/31/2016	Fine	15:43	0.35	M	0.175	1	6.60	6.57	25.53	25.51	95.2	95.2	7.79	7.80	3.4	3.1	0.03	0.03	25	25
TW2A	10/31/2016	Fine	15:43	0.35	M	0.175	2	6.54		25.49		95.2		7.80		2.8		0.03		25	

Note: 1. Depth Ave.: (Except E.coli) "Depth-averaged" is calculated by taking the arithmetic means for the reading of the surface, middle and bottom depths

2. ND: Not Detected

3. NA: Not Applicable

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
HC1	10/11/2016	Fine	15:30	0.1	M	0.05	1	4.9	4.7	<1	<1	3	3	2600	2839	0.065	0.057	0.009	0.009	0.199	0.194	0.21	0.19	0.048	0.048	0.07	0.07
HC1	10/11/2016	Fine	15:30	0.1	M	0.05	2	4.5		<1		3		3100		0.049		0.008		0.188		0.17		0.048		0.07	
HC1	10/13/2016	Fine	11:36	0.15	M	0.075	1	9.9	9.8	1	1	8	7.5	2100	2245	0.108	0.117	0.009	0.008	0.216	0.218	0.26	0.27	0.052	0.051	0.09	0.09
HC1	10/13/2016	Fine	11:36	0.15	M	0.075	2	9.6		1		7		2400		0.125		0.007		0.219		0.27		0.050		0.09	
HC1	10/15/2016	Fine	12:04	0.15	M	0.075	1	54.4	52.6	1	2	2	3.5	860	770	0.171	0.170	0.018	0.019	0.323	0.319	0.34	0.36	0.077	0.076	0.11	0.12
HC1	10/15/2016	Fine	12:04	0.15	M	0.075	2	50.7		3		5		690		0.168		0.020		0.315		0.38		0.074		0.13	
HC1	10/17/2016	Fine	12:07	0.2	M	0.1	1	9.6	8.7	<1	<1	4	4	12000	22978	0.090	0.090	0.010	0.010	0.253	0.251	0.20	0.20	0.060	0.060	0.09	0.09
HC1	10/17/2016	Fine	12:07	0.2	M	0.1	2	7.7		<1		4		44000		0.090		0.009		0.248		0.20		0.059		0.09	
HC1	10/19/2016	Rainy	13:15	1	M	0.5	1	342.0	336.0	2	1.5	28	26.5	8100	7087	0.039	0.041	<0.002	0.002	<0.002	0.002	1.06	0.98	0.003	0.003	0.14	0.13
HC1	10/19/2016	Rainy	13:15	1	M	0.5	2	330.0		1		25		6200		0.043		<0.002		<0.002		0.90		0.003		0.11	
HC1	10/22/2016	Cloudy	12:04	0.2	M	0.1	1	16.1	15.4	<1	<1	4	4	2500	2693	0.054	0.056	0.004	0.003	0.169	0.171	0.21	0.20	0.020	0.022	0.05	0.05
HC1	10/22/2016	Cloudy	12:04	0.2	M	0.1	2	14.6		<1		4		2900		0.058		0.002		0.173		0.18		0.023		0.04	
HC2	10/11/2016	Fine	15:55	0.1	M	0.05	1	48.0	47.0	37	33	76	72.5	180000	203470	1.730	1.435	<0.002	<0.002	<0.002	<0.002	3.66	3.63	0.060	0.069	0.51	0.50
HC2	10/11/2016	Fine	15:55	0.1	M	0.05	2	45.9		29		69		230000		1.140		<0.002		<0.002		3.60		0.077		0.48	
HC2	10/13/2016	Fine	11:49	0.05	M	0.025	1	30.6	30.2	76	74.5	111	108	870000	813142	2.040	2.055	<0.002	<0.002	<0.002	<0.002	6.68	6.36	0.016	0.016	0.59	0.60
HC2	10/13/2016	Fine	11:49	0.05	M	0.025	2	29.7		73		105		760000		2.070		<0.002		<0.002		6.04		0.015		0.60	
HC2	10/15/2016	Fine	11:24	0.1	M	0.05	1	43.4	44.9	149	140.5	216	214	890000	854283	1.500	1.490	<0.002	<0.002	0.010	0.009	6.72	6.41	0.495	0.408	1.08	1.05
HC2	10/15/2016	Fine	11:24	0.1	M	0.05	2	46.4		132		212		820000		1.480		<0.002		0.007		6.10		0.321		1.02	
HC2	10/17/2016	Fine	11:34	0.1	M	0.05	1	30.8	31.1	43	39	131	132.5	44000	44989	1.900	1.940	0.263	0.284	0.191	0.189	5.19	4.80	0.113	0.127	0.52	0.52
HC2	10/17/2016	Fine	11:34	0.1	M	0.05	2	31.4		35		134		46000		1.980		0.304		0.186		4.41		0.140		0.52	
HC2	10/19/2016	Rainy	13:26	0.9	M	0.45	1	171.0	183.0	2	2	24	26	31000	28931	0.086	0.081	0.009	0.008	0.319	0.317	0.70	0.72	0.050	0.050	0.15	0.16
HC2	10/19/2016	Rainy	13:26	0.9	M	0.45	2	195.0		2		28		27000		0.075		0.006		0.315		0.73		0.050		0.16	
HC2	10/22/2016	Cloudy	12:30	0.15	M	0.075	1	12.7	12.0	2	1.5	8	9	8600	8699	0.534	0.534	0.033	0.034	0.409	0.412	0.92	0.93	0.068	0.070	0.13	0.14
HC2	10/22/2016	Cloudy	12:30	0.15	M	0.075	2	11.2		1		10		8800		0.533		0.035		0.414		0.93		0.072		0.14	
HC3	10/11/2016	Fine	16:15	0.7	M	0.35	1	72.9	71.7	13	13	89	90	3500	3695	2.930	2.945	0.398	0.400	1.310	1.300	7.54	7.49	0.318	0.321	1.02	1.02
HC3	10/11/2016	Fine	16:15	0.7	M	0.35	2	70.4		13		91		3900		2.960		0.401		1.290		7.44		0.323		1.02	
HC3	10/13/2016	Fine	12:08	0.8	M	0.4	1	57.9	59.8	13	12.5	75	76	3500	3834	4.980	5.015	0.308	0.310	0.724	0.728	10.30	9.78	0.357	0.356	0.97	0.98
HC3	10/13/2016	Fine	12:08	0.8	M	0.4	2	61.6		12		77		4200		5.050		0.311		0.731		9.26		0.354		0.98	
HC3	10/15/2016	Fine	12:22	0.6	M	0.3	1	51.0	48.6	12	12.5	81	79	59	60	4.210	4.055	0.401	0.401	0.885	0.859	7.28	7.33	0.331	0.340	0.92	0.91
HC3	10/15/2016	Fine	12:22	0.6	M	0.3	2	46.2		13		77		61		3.900		0.400		0.832		7.38		0.348		0.90	
HC3	10/17/2016	Fine	12:23	0.6	M	0.3	1	53.5	53.2	14	14	74	76.5	14000	16310	3.620	3.535	0.354	0.350	1.000	1.010	8.33	8.08	0.307	0.306	0.91	0.92
HC3	10/17/2016	Fine	12:23	0.6	M	0.3	2	52.9		14		79		19000		3.450		0.345		1.020		7.82		0.305		0.93	
HC3	10/19/2016	Rainy	14:00	0.5	M	0.25	1	45.0	46.3	2	2.5	35	33	16000	20785	0.914	0.927	0.048	0.049	0.519	0.521	2.07	2.08	0.330	0.328	0.56	0.57
HC3	10/19/2016	Rainy	14:00	0.5	M	0.25	2	47.6		3		31		27000		0.940		0.049		0.522		2.09		0.326		0.57	
HC3	10/22/2016	Cloudy	12:56	0.5	M	0.25	1	41.2	41.9	5	5.5	27	27.5	590	733	2.290	2.280	0.086	0.086	0.311	0.318	3.56	3.64	0.406	0.406	0.69	0.71
HC3	10/22/2016	Cloudy	12:56	0.5	M	0.25	2	42.5		6		28		910		2.270		0.085		0.325		3.72		0.406		0.72	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
HC1	10/11/2016	Fine	15:30	0.1	M	0.05	1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	1	1	<10	<10	<10	11	<1	<1
HC1	10/11/2016	Fine	15:30	0.1	M	0.05	2	<1		<1		<1		<1		<1		1		<10		12		<1	
HC1	10/13/2016	Fine	11:36	0.15	M	0.075	1	<1	<1	<1	<1	3	3	1	1.5	<1	<1	<1	<1	<10	<10	14	13.5	<1	<1
HC1	10/13/2016	Fine	11:36	0.15	M	0.075	2	<1		<1		3		2		<1		<1		<10		13		<1	
HC1	10/15/2016	Fine	12:04	0.15	M	0.075	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<1	<1
HC1	10/15/2016	Fine	12:04	0.15	M	0.075	2	<1		<1		<1		<1		<1		<1		<10		<10		<1	
HC1	10/17/2016	Fine	12:07	0.2	M	0.1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	13	11.5	<1	<1
HC1	10/17/2016	Fine	12:07	0.2	M	0.1	2	<1		<1		<1		<1		<1		<1		<10		<10		<1	
HC1	10/19/2016	Rainy	13:15	1	M	0.5	1	<1	<1	1	1.5	9	10.5	5	6	<1	<1	1	1	<10	<10	28	30.5	<1	<1
HC1	10/19/2016	Rainy	13:15	1	M	0.5	2	<1		2		12		7		<1		1		<10		33		<1	
HC1	10/22/2016	Cloudy	12:04	0.2	M	0.1	1	<1	<1	<1	<1	<1	<1	1	1	<1	<1	<1	<1	<10	<10	19	17	<1	<1
HC1	10/22/2016	Cloudy	12:04	0.2	M	0.1	2	<1		<1		<1		1		<1		<1		<10		15		<1	
HC2	10/11/2016	Fine	15:55	0.1	M	0.05	1	<1	<1	5	4.5	<1	<1	6	5	<1	<1	6	5.5	<10	<10	112	109	<1	<1
HC2	10/11/2016	Fine	15:55	0.1	M	0.05	2	<1		4		<1		4		<1		5		<10		106		<1	
HC2	10/13/2016	Fine	11:49	0.05	M	0.025	1	<1	<1	<1	<1	5	5.5	<1	<1	<1	<1	3	3	<10	<10	29	28	<1	<1
HC2	10/13/2016	Fine	11:49	0.05	M	0.025	2	<1		<1		6		<1		<1		3		<10		27		<1	
HC2	10/15/2016	Fine	11:24	0.1	M	0.05	1	<1	<1	<1	<1	5	5	<1	<1	<1	<1	4	4	<10	<10	58	54	<1	<1
HC2	10/15/2016	Fine	11:24	0.1	M	0.05	2	<1		<1		5		<1		<1		4		<10		50		<1	
HC2	10/17/2016	Fine	11:34	0.1	M	0.05	1	<1	<1	<1	<1	4	4	<1	1	<1	<1	3	3	<10	<10	29	27.5	<1	<1
HC2	10/17/2016	Fine	11:34	0.1	M	0.05	2	<1		<1		4		1		<1		3		<10		26		<1	
HC2	10/19/2016	Rainy	13:26	0.9	M	0.45	1	<1	<1	6	6	7	7	8	7.5	<1	<1	2	2.5	<10	<10	47	48	<1	<1
HC2	10/19/2016	Rainy	13:26	0.9	M	0.45	2	<1		6		7		7		<1		3		<10		49		<1	
HC2	10/22/2016	Cloudy	12:30	0.15	M	0.075	1	<1	<1	<1	<1	1	1.5	<1	1	<1	<1	3	2.5	<10	<10	18	14	<1	<1
HC2	10/22/2016	Cloudy	12:30	0.15	M	0.075	2	<1		<1		2		1		<1		2		<10		10		<1	
HC3	10/11/2016	Fine	16:15	0.7	M	0.35	1	<1	<1	<1	<1	<1	<1	5	5	<1	<1	4	4	<10	<10	71	77.5	<1	<1
HC3	10/11/2016	Fine	16:15	0.7	M	0.35	2	<1		<1		<1		5		<1		4		<10		84		<1	
HC3	10/13/2016	Fine	12:08	0.8	M	0.4	1	<1	<1	<1	<1	36	38.5	4	4.5	<1	<1	2	2.5	<10	<10	78	76	<1	<1
HC3	10/13/2016	Fine	12:08	0.8	M	0.4	2	<1		<1		41		5		<1		3		<10		74		<1	
HC3	10/15/2016	Fine	12:22	0.6	M	0.3	1	<1	<1	<1	<1	49	47.5	6	6	<1	<1	4	4	<10	<10	81	80	<1	<1
HC3	10/15/2016	Fine	12:22	0.6	M	0.3	2	<1		<1		46		6		<1		4		<10		79		<1	
HC3	10/17/2016	Fine	12:23	0.6	M	0.3	1	<1	<1	<1	1	40	46.5	4	4	<1	<1	3	3	<10	<10	59	65	<1	<1
HC3	10/17/2016	Fine	12:23	0.6	M	0.3	2	<1		<1		53		4		<1		3		<10		71		<1	
HC3	10/19/2016	Rainy	14:00	0.5	M	0.25	1	<1	<1	2	2	21	20.5	7	6.5	<1	<1	2	2	<10	<10	92	103	<1	<1
HC3	10/19/2016	Rainy	14:00	0.5	M	0.25	2	<1		2		20		6		<1		2		<10		114		<1	
HC3	10/22/2016	Cloudy	12:56	0.5	M	0.25	1	<1	<1	<1	<1	12	13.5	5	4.5	<1	<1	2	2	<10	<10	55	56	<1	<1
HC3	10/22/2016	Cloudy	12:56	0.5	M	0.25	2	<1		<1		15		4		<1		2		<10		57		<1	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
LFT1	10/11/2016	Fine	14:15	0.1	M	0.05	1	4.0	3.1	2	1.5	8	9	6800	6997	1.250	1.255	0.308	0.309	1.100	1.085	1.29	1.40	0.358	0.360	0.43	0.44
LFT1	10/11/2016	Fine	14:15	0.1	M	0.05	2	2.1		1		10		7200		1.260		0.309		1.070		1.51		0.362		0.44	
LFT1	10/13/2016	Fine	10:32	0.08	M	0.04	1	3.1	3.7	3	3	9	8.5	8800	8699	0.881	0.849	0.293	0.296	1.040	1.050	1.06	1.11	0.332	0.333	0.43	0.44
LFT1	10/13/2016	Fine	10:32	0.08	M	0.04	2	4.3		3		8		8600		0.817		0.299		1.060		1.16		0.334		0.45	
LFT1	10/15/2016	Fine	10:40	0.15	M	0.075	1	4.5	4.6	2	2	8	8	78	83	1.390	1.305	0.337	0.337	0.894	0.892	1.67	1.51	0.378	0.380	0.49	0.49
LFT1	10/15/2016	Fine	10:40	0.15	M	0.075	2	4.6		2		8		89		1.220		0.336		0.890		1.35		0.382		0.48	
LFT1	10/17/2016	Fine	10:16	0.1	M	0.05	1	4.0	3.8	3	3	8	8	13000	13000	0.937	0.889	0.245	0.240	0.834	0.846	1.30	1.29	0.347	0.347	0.44	0.44
LFT1	10/17/2016	Fine	10:16	0.1	M	0.05	2	3.5		3		8		13000		0.840		0.234		0.857		1.27		0.346		0.43	
LFT1	10/19/2016	Rainy	11:09	0.1	M	0.05	1	17.3	18.4	2	2	17	17.5	17000	18439	0.302	0.293	0.032	0.030	0.600	0.598	0.78	0.78	0.466	0.462	0.57	0.58
LFT1	10/19/2016	Rainy	11:09	0.1	M	0.05	2	19.4		2		18		20000		0.283		0.028		0.596		0.77		0.457		0.58	
LFT1	10/22/2016	Cloudy	10:33	0.05	M	0.025	1	8.2	9.3	2	1.5	10	9.5	2100	2337	0.891	0.905	0.146	0.148	1.050	1.055	1.51	1.59	0.464	0.464	0.58	0.58
LFT1	10/22/2016	Cloudy	10:33	0.05	M	0.025	2	10.4		1		9		2600		0.919		0.150		1.060		1.66		0.464		0.57	
LFT2	10/11/2016	Fine	14:50	0.2	M	0.1	1	39.1	39.0	2	2	16	16	4600	4844	2.800	2.810	0.360	0.361	0.647	0.691	3.53	3.57	0.940	0.939	1.41	1.43
LFT2	10/11/2016	Fine	14:50	0.2	M	0.1	2	38.8		2		16		5100		2.820		0.361		0.735		3.60		0.937		1.44	
LFT2	10/13/2016	Fine	11:07	0.3	M	0.15	1	20.3	19.0	2	2.5	13	14.5	6100	5897	2.160	2.150	0.345	0.344	0.686	0.688	2.59	2.64	0.721	0.722	0.94	0.93
LFT2	10/13/2016	Fine	11:07	0.3	M	0.15	2	17.6		3		16		5700		2.140		0.342		0.689		2.69		0.723		0.92	
LFT2	10/15/2016	Fine	13:16	0.3	M	0.15	1	39.1	40.5	4	4	13	13	1600	2040	1.440	1.475	0.546	0.544	0.982	0.978	1.74	1.89	0.601	0.620	0.96	1.01
LFT2	10/15/2016	Fine	13:16	0.3	M	0.15	2	41.8		4		13		2600		1.510		0.542		0.974		2.04		0.638		1.05	
LFT2	10/17/2016	Fine	11:09	0.15	M	0.075	1	38.9	38.2	5	5	19	19.5	30000	32863	6.570	6.430	0.217	0.219	0.462	0.471	7.25	7.36	1.720	1.760	2.13	2.14
LFT2	10/17/2016	Fine	11:09	0.15	M	0.075	2	37.4		5		20		36000		6.290		0.220		0.479		7.47		1.800		2.14	
LFT2	10/19/2016	Rainy	11:53	0.2	M	0.1	1	66.3	63.8	2	2	15	15.5	6500	6193	0.380	0.382	0.026	0.025	0.714	0.708	1.00	0.97	0.350	0.353	0.58	0.56
LFT2	10/19/2016	Rainy	11:53	0.2	M	0.1	2	61.2		2		16		5900		0.384		0.023		0.702		0.94		0.356		0.53	
LFT2	10/22/2016	Cloudy	11:08	0.35	M	0.175	1	16.6	17.6	1	1	8	8	440	469	0.832	0.804	0.073	0.081	0.967	0.969	1.01	1.02	0.317	0.316	0.42	0.42
LFT2	10/22/2016	Cloudy	11:08	0.35	M	0.175	2	18.5		1		8		500		0.776		0.088		0.970		1.02		0.315		0.41	
LFT3	10/11/2016	Fine	14:35	0.8	M	0.4	1	150.0	153.5	13	14.5	121	116.5	2100	1997	0.040	0.040	<0.002	<0.002	<0.002	<0.002	3.89	3.91	0.010	0.010	0.34	0.36
LFT3	10/11/2016	Fine	14:35	0.8	M	0.4	2	157.0		16		112		1900		<0.025		<0.002		<0.002		3.92		0.009		0.37	
LFT3	10/13/2016	Fine	10:48	0.6	M	0.3	1	78.2	77.0	12	12.5	83	87	1100	1241	0.067	0.062	<0.002	<0.002	<0.002	<0.002	2.90	2.97	0.006	0.007	0.24	0.25
LFT3	10/13/2016	Fine	10:48	0.6	M	0.3	2	75.7		13		91		1400		0.057		<0.002		<0.002		3.04		0.007		0.26	
LFT3	10/15/2016	Fine	11:04	0.9	M	0.45	1	128.0	130.0	16	16.5	106	111	3500	3788	0.027	0.027	<0.002	<0.002	<0.002	<0.002	3.48	3.43	0.006	0.006	0.32	0.33
LFT3	10/15/2016	Fine	11:04	0.9	M	0.45	2	132.0		17		116		4100		0.026		<0.002		<0.002		3.38		0.006		0.33	
LFT3	10/17/2016	Fine	10:29	0.9	M	0.45	1	79.7	79.0	18	17	101	98.5	71	77	0.055	0.055	<0.002	<0.002	<0.002	<0.002	4.89	4.55	0.006	0.006	0.27	0.27
LFT3	10/17/2016	Fine	10:29	0.9	M	0.45	2	78.3		16		96		84		0.055		<0.002		<0.002		4.21		0.006		0.26	
LFT3	10/19/2016	Rainy	11:36	1	M	0.5	1	59.3	57.3	11	10	78	72	2400	2814	0.034	0.031	<0.002	<0.002	<0.002	<0.002	2.96	3.03	0.004	0.004	0.25	0.25
LFT3	10/19/2016	Rainy	11:36	1	M	0.5	2	55.3		9		66		3300		0.027		<0.002		<0.002		3.10		0.003		0.25	
LFT3	10/22/2016	Cloudy	10:51	0.7	M	0.35	1	66.4	69.0	10	11.5	57	57.5	2800	2646	0.042	0.040	<0.002	<0.002	<0.002	<0.002	2.95	3.11	0.002	0.002	0.24	0.26
LFT3	10/22/2016	Cloudy	10:51	0.7	M	0.35	2	71.5		13		58		2500		0.037		<0.002		<0.002		3.27		<0.002		0.27	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
LFT1	10/11/2016	Fine	14:15	0.1	M	0.05	1	<1	<1	<1	<1	<1	<1	2	4	<1	<1	1	1.5	<10	<10	17	18.5	<1	<1
LFT1	10/11/2016	Fine	14:15	0.1	M	0.05	2	<1		<1		<1		6		<1		2		<10		20		<1	
LFT1	10/13/2016	Fine	10:32	0.08	M	0.04	1	<1	<1	<1	<1	2	2	<1	1	<1	<1	<1	<1	<10	<10	11	11	<1	<1
LFT1	10/13/2016	Fine	10:32	0.08	M	0.04	2	<1		<1		2		<1		<1		<1		<10		<10		<1	
LFT1	10/15/2016	Fine	10:40	0.15	M	0.075	1	<1	<1	<1	<1	2	2	<1	1	<1	<1	3	2.5	<10	<10	23	23.5	<1	<1
LFT1	10/15/2016	Fine	10:40	0.15	M	0.075	2	<1		<1		2		<1		<1		2		<10		24		<1	
LFT1	10/17/2016	Fine	10:16	0.1	M	0.05	1	<1	<1	<1	<1	2	2	1	1	<1	<1	<1	<1	<10	<10	<10	13	<1	<1
LFT1	10/17/2016	Fine	10:16	0.1	M	0.05	2	<1		<1		2		1		<1		<1		<10		13		<1	
LFT1	10/19/2016	Rainy	11:09	0.1	M	0.05	1	<1	<1	1	<1	24	25.5	8	8	<1	<1	2	2	<10	<10	47	47	<1	<1
LFT1	10/19/2016	Rainy	11:09	0.1	M	0.05	2	<1		1		27		8		<1		2		<10		47		<1	
LFT1	10/22/2016	Cloudy	10:33	0.05	M	0.025	1	<1	<1	<1	<1	3	3	2	1.5	<1	<1	2	2	<10	<10	20	24	<1	<1
LFT1	10/22/2016	Cloudy	10:33	0.05	M	0.025	2	<1		<1		3		1		<1		2		<10		28		<1	
LFT2	10/11/2016	Fine	14:50	0.2	M	0.1	1	<1	<1	<1	<1	60	59.5	12	12	<1	<1	2	2.5	<10	<10	153	177.5	<1	<1
LFT2	10/11/2016	Fine	14:50	0.2	M	0.1	2	<1		<1		59		12		<1		3		<10		202		<1	
LFT2	10/13/2016	Fine	11:07	0.3	M	0.15	1	<1	<1	<1	<1	46	46.5	8	8	<1	<1	<1	<1	<10	<10	92	101	<1	<1
LFT2	10/13/2016	Fine	11:07	0.3	M	0.15	2	<1		<1		47		8		<1		<1		<10		110		<1	
LFT2	10/15/2016	Fine	13:16	0.3	M	0.15	1	<1	<1	<1	<1	49	53	12	14	<1	<1	1	1	<10	<10	111	121.5	<1	<1
LFT2	10/15/2016	Fine	13:16	0.3	M	0.15	2	<1		<1		57		16		<1		1		<10		132		<1	
LFT2	10/17/2016	Fine	11:09	0.15	M	0.075	1	<1	<1	<1	<1	23	22.5	11	10.5	<1	<1	1	1	<10	<10	57	56	<1	<1
LFT2	10/17/2016	Fine	11:09	0.15	M	0.075	2	<1		<1		22		10		<1		1		<10		55		<1	
LFT2	10/19/2016	Rainy	11:53	0.2	M	0.1	1	<1	<1	2	1.5	15	14.5	28	26	<1	<1	2	1.5	<10	<10	103	99.5	<1	<1
LFT2	10/19/2016	Rainy	11:53	0.2	M	0.1	2	<1		1		14		24		<1		1		<10		96		<1	
LFT2	10/22/2016	Cloudy	11:08	0.35	M	0.175	1	<1	<1	<1	<1	9	8.5	6	5	<1	<1	1	1	<10	<10	33	32	<1	<1
LFT2	10/22/2016	Cloudy	11:08	0.35	M	0.175	2	<1		<1		8		4		<1		<1		<10		31		<1	
LFT3	10/11/2016	Fine	14:35	0.8	M	0.4	1	<1	<1	3	2.5	79	82.5	32	32	<1	<1	2	2.5	<10	<10	196	186	<1	<1
LFT3	10/11/2016	Fine	14:35	0.8	M	0.4	2	<1		2		86		32		<1		3		<10		176		<1	
LFT3	10/13/2016	Fine	10:48	0.6	M	0.3	1	<1	<1	<1	1	34	33.5	5	5	<1	<1	<1	<1	<10	<10	44	42	<1	<1
LFT3	10/13/2016	Fine	10:48	0.6	M	0.3	2	<1		<1		33		5		<1		<1		<10		40		<1	
LFT3	10/15/2016	Fine	11:04	0.9	M	0.45	1	<1	<1	<1	1	26	22.5	11	11	<1	<1	1	1	<10	<10	23	20	<1	<1
LFT3	10/15/2016	Fine	11:04	0.9	M	0.45	2	<1		<1		19		11		<1		<1		<10		17		<1	
LFT3	10/17/2016	Fine	10:29	0.9	M	0.45	1	<1	<1	<1	1	21	20	11	10	<1	<1	1	1	<10	<10	48	44.5	<1	<1
LFT3	10/17/2016	Fine	10:29	0.9	M	0.45	2	<1		<1		19		9		<1		<1		<10		41		<1	
LFT3	10/19/2016	Rainy	11:36	1	M	0.5	1	<1	<1	1	1	15	13.5	7	7	<1	<1	1	1	<10	<10	38	36.5	<1	<1
LFT3	10/19/2016	Rainy	11:36	1	M	0.5	2	<1		<1		12		7		<1		1		<10		35		<1	
LFT3	10/22/2016	Cloudy	10:51	0.7	M	0.35	1	<1	<1	<1	<1	9	9	6	6	<1	<1	<1	1	<10	<10	34	34.5	<1	<1
LFT3	10/22/2016	Cloudy	10:51	0.7	M	0.35	2	<1		<1		9		6		<1		<1		<10		35		<1	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
SSNV1	10/11/2016	Fine	17:10	0.2	M	0.1	1	12.5	13.3	9	9	28	28	33000	36332	30.000	30.000	0.318	0.320	0.721	0.724	30.60	30.80	2.940	2.945	3.32	3.31
SSNV1	10/11/2016	Fine	17:10	0.2	M	0.1	2	14.0		9		28		40000		30.000		0.321		0.727		31.00		2.950		3.30	
SSNV1	10/13/2016	Fine	14:08	0.05	M	0.025	1	4.8	4.5	2	2	6	6	18000	19442	0.988	0.985	0.281	0.278	1.080	1.085	1.13	1.18	0.670	0.667	0.78	0.77
SSNV1	10/13/2016	Fine	14:08	0.05	M	0.025	2	4.1		2		6		21000		0.982		0.275		1.090		1.22		0.664		0.76	
SSNV1	10/15/2016	Fine	15:36	0.1	M	0.05	1	16.4	16.3	7	8.5	22	21	56000	52383	22.100	21.950	0.540	0.544	0.869	0.864	22.10	22.25	1.820	1.805	2.31	2.34
SSNV1	10/15/2016	Fine	15:36	0.1	M	0.05	2	16.1		10		20		49000		21.800		0.547		0.859		22.40		1.790		2.36	
SSNV1	10/17/2016	Fine	14:07	0.1	M	0.05	1	6.9	6.5	4	4	11	11	110000	124097	1.460	1.435	0.251	0.251	0.799	0.795	2.18	2.17	1.120	1.135	1.29	1.30
SSNV1	10/17/2016	Fine	14:07	0.1	M	0.05	2	6.0		4		11		140000		1.410		0.250		0.790		2.16		1.150		1.30	
SSNV1	10/19/2016	Rainy	14:57	0.3	M	0.15	1	21.7	20.7	7	7	25	25	20000	25298	20.000	20.250	0.034	0.035	0.766	0.769	20.80	20.90	2.160	2.125	2.33	2.33
SSNV1	10/19/2016	Rainy	14:57	0.3	M	0.15	2	19.6		7		25		32000		20.500		0.036		0.772		21.00		2.090		2.33	
SSNV1	10/22/2016	Cloudy	13:47	0.1	M	0.05	1	6.8	8.0	<1	<1	4	3.5	560	502	0.317	0.306	0.028	0.031	0.795	0.793	0.46	0.44	0.182	0.184	0.22	0.22
SSNV1	10/22/2016	Cloudy	13:47	0.1	M	0.05	2	9.2		<1		3		450		0.294		0.034		0.791		0.42		0.186		0.22	
SSNV2	10/11/2016	Fine	16:50	0.8	M	0.4	1	5.7	5.8	4	3.5	13	12.5	190000	209045	9.680	9.840	0.240	0.240	0.702	0.699	10.60	10.60	1.180	1.180	1.36	1.36
SSNV2	10/11/2016	Fine	16:50	0.8	M	0.4	2	5.9		3		12		230000		10.000		0.240		0.695		10.60		1.180		1.35	
SSNV2	10/13/2016	Fine	13:51	0.6	M	0.3	1	5.3	5.4	2	2	7	7	330	368	0.848	0.838	0.214	0.214	0.776	0.774	1.19	1.19	0.536	0.537	0.66	0.65
SSNV2	10/13/2016	Fine	13:51	0.6	M	0.3	2	5.5		2		7		410		0.827		0.214		0.771		1.18		0.537		0.64	
SSNV2	10/15/2016	Fine	15:08	0.3	M	0.15	1	7.6	8.8	2	2	11	10	160	179	0.979	0.979	0.314	0.317	0.694	0.696	1.15	1.12	0.914	0.892	1.10	1.08
SSNV2	10/15/2016	Fine	15:08	0.3	M	0.15	2	10.0		2		9		200		0.979		0.319		0.697		1.08		0.869		1.05	
SSNV2	10/17/2016	Fine	13:41	0.6	M	0.3	1	5.0	6.1	4	3.5	8	8.5	14000	15875	0.929	0.930	0.167	0.169	0.603	0.600	1.37	1.39	0.852	0.846	0.95	0.97
SSNV2	10/17/2016	Fine	13:41	0.6	M	0.3	2	7.2		3		9		18000		0.931		0.170		0.597		1.40		0.840		0.99	
SSNV2	10/19/2016	Rainy	14:40	1.3	M	0.65	1	33.8	35.0	2	2	14	13	85000	79310	0.261	0.240	0.013	0.014	0.687	0.684	0.52	0.54	0.192	0.193	0.28	0.29
SSNV2	10/19/2016	Rainy	14:40	1.3	M	0.65	2	36.2		2		12		74000		0.218		0.015		0.680		0.56		0.194		0.30	
SSNV2	10/22/2016	Cloudy	13:32	1	M	0.5	1	7.4	8.4	<1	<1	3	3	970	908	0.243	0.255	0.033	0.030	0.751	0.754	0.44	0.45	0.155	0.148	0.19	0.19
SSNV2	10/22/2016	Cloudy	13:32	1	M	0.5	2	9.3		<1		3		850		0.267		0.026		0.756		0.45		0.140		0.18	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

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3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis															
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
SSNV1	10/11/2016	Fine	17:10	0.2	M	0.1	1	<1	<1	<1	<1	8	8	2	2	<1	<1	2	2	<10	<10	44	41	<1	<1
SSNV1	10/11/2016	Fine	17:10	0.2	M	0.1	2	<1		<1		7		2		<1		2		<10		38		<1	
SSNV1	10/13/2016	Fine	14:08	0.05	M	0.025	1	<1	<1	<1	<1	5	4	<1	<1	<1	<1	<1	<1	<10	<10	20	21	<1	<1
SSNV1	10/13/2016	Fine	14:08	0.05	M	0.025	2	<1		<1		3		<1		<1		<1		<10		21		<1	
SSNV1	10/15/2016	Fine	15:36	0.1	M	0.05	1	<1	<1	<1	<1	9	9	1	2	<1	<1	2	2	<10	<10	76	80	<1	<1
SSNV1	10/15/2016	Fine	15:36	0.1	M	0.05	2	<1		<1		9		2		<1		2		<10		83		<1	
SSNV1	10/17/2016	Fine	14:07	0.1	M	0.05	1	<1	<1	<1	<1	4	4	1	1	<1	<1	<1	<1	<10	<10	34	32	<1	<1
SSNV1	10/17/2016	Fine	14:07	0.1	M	0.05	2	<1		<1		3		<1		<1		<1		<10		30		<1	
SSNV1	10/19/2016	Rainy	14:57	0.3	M	0.15	1	<1	<1	<1	<1	8	9	3	4	<1	<1	2	2	<10	<10	33	37	<1	<1
SSNV1	10/19/2016	Rainy	14:57	0.3	M	0.15	2	<1		<1		10		5		<1		2		<10		40		<1	
SSNV1	10/22/2016	Cloudy	13:47	0.1	M	0.05	1	<1	<1	<1	<1	2	2	1	1	<1	<1	<1	<1	<10	<10	18	18	<1	<1
SSNV1	10/22/2016	Cloudy	13:47	0.1	M	0.05	2	<1		<1		2		1		<1		<1		<10		18		<1	
SSNV2	10/11/2016	Fine	16:50	0.8	M	0.4	1	<1	<1	<1	<1	22	21	2	2	<1	<1	2	2	<10	<10	48	51	<1	<1
SSNV2	10/11/2016	Fine	16:50	0.8	M	0.4	2	<1		<1		20		1		<1		1		<10		53		<1	
SSNV2	10/13/2016	Fine	13:51	0.6	M	0.3	1	<1	<1	<1	<1	43	47	<1	<1	<1	<1	<1	<1	<10	<10	33	31	<1	<1
SSNV2	10/13/2016	Fine	13:51	0.6	M	0.3	2	<1		<1		50		<1		<1		<1		<10		28		<1	
SSNV2	10/15/2016	Fine	15:08	0.3	M	0.15	1	<1	<1	<1	<1	34	30	6	6	<1	<1	<1	<1	<10	<10	61	60	<1	<1
SSNV2	10/15/2016	Fine	15:08	0.3	M	0.15	2	<1		<1		26		5		<1		<1		<10		59		<1	
SSNV2	10/17/2016	Fine	13:41	0.6	M	0.3	1	<1	<1	<1	<1	22	20	5	5	<1	<1	<1	<1	<10	<10	42	44	<1	<1
SSNV2	10/17/2016	Fine	13:41	0.6	M	0.3	2	<1		<1		18		4		<1		<1		<10		46		<1	
SSNV2	10/19/2016	Rainy	14:40	1.3	M	0.65	1	<1	<1	<1	<1	6	6	7	6	<1	<1	<1	<1	<10	<10	41	38	<1	<1
SSNV2	10/19/2016	Rainy	14:40	1.3	M	0.65	2	<1		<1		5		5		<1		<1		<10		34		<1	
SSNV2	10/22/2016	Cloudy	13:32	1	M	0.5	1	<1	<1	<1	<1	4	4	1	1	<1	<1	<1	<1	<10	<10	18	14	<1	<1
SSNV2	10/22/2016	Cloudy	13:32	1	M	0.5	2	<1		<1		4		1		<1		<1		<10		10		<1	

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Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
TW1	10/11/2016	Fine	13:45	0.1	M	0.05	1	9.1	9.9	<1	<1	5	4.5	860	889	<0.025	<0.025	0.007	0.007	0.077	0.077	0.08	0.12	0.020	0.020	0.03	0.04
TW1	10/11/2016	Fine	13:45	0.1	M	0.05	2	10.7		<1		4		920		<0.025		0.007		0.076		0.15		0.019		0.05	
TW1	10/13/2016	Fine	9:46	0.07	M	0.035	1	4.0	5.0	<1	<1	2	2.5	ND	1	<0.025	0.026	0.007	0.006	0.088	0.090	0.08	0.11	0.013	0.013	0.03	0.04
TW1	10/13/2016	Fine	9:46	0.07	M	0.035	2	6.0		<1		3		ND		0.026		0.005		0.092		0.14		0.013		0.04	
TW1	10/15/2016	Fine	9:44	0.1	M	0.05	1	3.4	2.9	<1	<1	7	6	3700	3895	0.029	0.030	0.003	0.003	0.082	0.084	0.08	0.11	0.014	0.014	0.03	0.04
TW1	10/15/2016	Fine	9:44	0.1	M	0.05	2	2.3		<1		5		4100		0.030		<0.002		0.086		0.13		0.014		0.04	
TW1	10/17/2016	Fine	9:36	0.1	M	0.05	1	15.0	14.2	1	<1	7	6.5	360	379	0.035	0.034	0.007	0.007	0.073	0.069	0.16	0.16	0.015	0.015	0.05	0.05
TW1	10/17/2016	Fine	9:36	0.1	M	0.05	2	13.4		<1		6		400		0.032		0.006		0.065		0.16		0.014		0.05	
TW1	10/19/2016	Rainy	10:15	0.15	M	0.075	1	10.5	10.1	1	1	17	16.5	7800	6369	0.051	0.047	<0.002	<0.002	0.139	0.139	0.46	0.44	0.121	0.124	0.19	0.19
TW1	10/19/2016	Rainy	10:15	0.15	M	0.075	2	9.6		1		16		5200		0.043		<0.002		0.139		0.41		0.126		0.19	
TW1	10/22/2016	Cloudy	9:35	0.1	M	0.05	1	3.7	3.5	<1	<1	5	5	690	784	0.053	0.050	0.006	0.004	0.153	0.152	0.17	0.16	0.022	0.019	0.04	0.04
TW1	10/22/2016	Cloudy	9:35	0.1	M	0.05	2	3.2		<1		5		890		0.047		0.002		0.150		0.14		0.015		0.03	
TW2A	10/19/2016	Rainy	10:34	0.5	M	0.25	1	14.0	13.2	1	1	15	15.5	110000	132665	0.046	0.050	0.005	0.005	0.113	0.110	0.40	0.37	0.089	0.088	0.15	0.15
TW2A	10/19/2016	Rainy	10:34	0.5	M	0.25	2	12.4		<1		16		160000		0.054		0.005		0.107		0.34		0.087		0.14	
TW2A	10/22/2016	Cloudy	9:50	0.4	M	0.2	1	7.6	9.0	<1	<1	6	6	320	449	0.044	0.039	0.003	0.003	0.133	0.133	0.19	0.17	0.014	0.015	0.04	0.04
TW2A	10/22/2016	Cloudy	9:50	0.4	M	0.2	2	10.4		<1		6		630		0.033		<0.002		0.133		0.15		0.015		0.04	
TW2A	10/24/2016	Fine	9:37	0.35	M	0.175	1	23.2	23.6	2	2	7	7	560	631	0.028	0.032	<0.002	<0.002	0.093	0.093	0.43	0.43	0.012	0.012	0.04	0.04
TW2A	10/24/2016	Fine	9:37	0.35	M	0.175	2	24.0		2		7		710		0.036		<0.002		0.092		0.42		0.011		0.04	
TW2A	10/26/2016	Fine	15:00	0.35	M	0.175	1	5.9	6.5	1	1	7	6.5	1800	1697	0.043	0.045	<0.002	<0.002	0.070	0.067	0.13	0.14	0.010	0.015	0.03	0.04
TW2A	10/26/2016	Fine	15:00	0.35	M	0.175	2	7.0		<1		6		1600		0.047		<0.002		0.064		0.15		0.019		0.04	
TW2A	10/28/2016	Fine	9:40	0.3	M	0.15	1	6.3	6.5	3	2.5	12	11	1500	1688	0.063	0.058	<0.002	<0.002	0.060	0.060	0.67	0.63	0.011	0.011	0.02	0.02
TW2A	10/28/2016	Fine	9:40	0.3	M	0.15	2	6.7		2		10		1900		0.052		<0.002		0.059		0.59		0.011		0.02	
TW2A	10/31/2016	Fine	15:43	0.35	M	0.175	1	2.8	3.1	4	6	10	10	2500	3354	0.035	0.036	<0.002	<0.002	0.057	0.052	0.53	0.44	0.014	0.013	0.02	0.02
TW2A	10/31/2016	Fine	15:43	0.35	M	0.175	2	3.4		8		10		4500		0.036		<0.002		0.047		0.35		0.011		0.02	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis															
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
TW1	10/11/2016	Fine	13:45	0.1	M	0.05	1	1	1	<1	<1	<1	<1	5	4.5	<1	<1	<1	<1	<10	10	13	13	<1	<1
TW1	10/11/2016	Fine	13:45	0.1	M	0.05	2	<1		<1		<1		4		<1		<1		<10		<10		<1	
TW1	10/13/2016	Fine	9:46	0.07	M	0.035	1	<1	<1	<1	<1	10	9.5	1	1	<1	<1	<1	<1	<10	10	16	15.5	<1	<1
TW1	10/13/2016	Fine	9:46	0.07	M	0.035	2	<1		<1		9		<1		<1		<1		<10		15		<1	
TW1	10/15/2016	Fine	9:44	0.1	M	0.05	1	<1	<1	<1	<1	1	1	<1	<1	<1	<1	<1	<1	<10	10	12	13	<1	<1
TW1	10/15/2016	Fine	9:44	0.1	M	0.05	2	<1		<1		1		<1		<1		<1		<10		14		<1	
TW1	10/17/2016	Fine	9:36	0.1	M	0.05	1	<1	<1	<1	<1	<1	<1	2	2	<1	<1	<1	<1	<10	10	<10	10	<1	<1
TW1	10/17/2016	Fine	9:36	0.1	M	0.05	2	<1		<1		<1		2		<1		<1		<10		10		<1	
TW1	10/19/2016	Rainy	10:15	0.15	M	0.075	1	<1	<1	<1	<1	14	15.5	3	3.5	<1	<1	1	<1	<10	10	34	37	<1	<1
TW1	10/19/2016	Rainy	10:15	0.15	M	0.075	2	<1		<1		17		4		<1		1		<10		40		<1	
TW1	10/22/2016	Cloudy	9:35	0.1	M	0.05	1	<1	<1	<1	<1	1	1	1	1	<1	<1	<1	<1	<10	10	35	37	<1	<1
TW1	10/22/2016	Cloudy	9:35	0.1	M	0.05	2	<1		<1		1		1		<1		<1		<10		39		<1	
TW2A	10/19/2016	Rainy	10:34	0.5	M	0.25	1	<1	<1	<1	<1	10	10	4	4	<1	<1	1	1	<10	<10	25	24.5	<1	<1
TW2A	10/19/2016	Rainy	10:34	0.5	M	0.25	2	<1		<1		10		4		<1		1		<10		24		<1	
TW2A	10/22/2016	Cloudy	9:50	0.4	M	0.2	1	<1	<1	<1	<1	1	1	2	2	<1	<1	<1	<1	<10	<10	15	17	<1	<1
TW2A	10/22/2016	Cloudy	9:50	0.4	M	0.2	2	<1		<1		<1		2		<1		<1		<10		19		<1	
TW2A	10/24/2016	Fine	9:37	0.35	M	0.175	1	<1	<1	<1	<1	4	5	<1	6	<1	<1	<1	<1	<10	<10	<10	60	<1	<1
TW2A	10/24/2016	Fine	9:37	0.35	M	0.175	2	<1		<1		6		6		<1		<1		<10		110		<1	
TW2A	10/26/2016	Fine	15:00	0.35	M	0.175	1	<1	<1	<1	<1	3	3	2	2	<1	<1	1	1	<10	<10	27	30.5	<1	<1
TW2A	10/26/2016	Fine	15:00	0.35	M	0.175	2	<1		<1		3		2		<1		1		<10		34		<1	
TW2A	10/28/2016	Fine	9:40	0.3	M	0.15	1	<1	<1	<1	<1	<1	2	<1	2	<1	<1	<1	2	<10	<10	11	16.5	<1	<1
TW2A	10/28/2016	Fine	9:40	0.3	M	0.15	2	<1		<1		3		2		<1		2		<10		22		<1	
TW2A	10/31/2016	Fine	15:43	0.35	M	0.175	1	<1	<1	<1	<1	2	2	<1	<1	<1	<1	<1	<1	<10	<10	11	12	<1	<1
TW2A	10/31/2016	Fine	15:43	0.35	M	0.175	2	<1		<1		2		<1		<1		<1		<10		13		<1	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

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MaterialLab

Dry Season

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
HC1	11/22/2016	Cloudy	14:41	0.2	M	0.1	1	6.61	6.66	23.33	23.34	96.8	96.2	8.21	8.18	19.9	19.9	0.06	0.06	20	20
HC1	11/22/2016	Cloudy	14:41	0.2	M	0.1	2	6.70		23.35		95.6		8.14		19.9		0.06		20	
HC1	11/24/2016	Fine	12:35	0.1	M	0.05	1	6.91	6.93	19.22	19.21	95.1	95.3	8.79	8.81	6.6	6.7	0.03	0.03	12	13
HC1	11/24/2016	Fine	12:35	0.1	M	0.05	2	6.95		19.19		95.5		8.83		6.8		0.03		14	
HC1	11/26/2016	Cloudy	13:49	0.2	M	0.1	1	7.23	7.22	18.63	18.63	95.3	95.4	8.90	8.91	10.2	10.2	0.05	0.06	13	13
HC1	11/26/2016	Cloudy	13:49	0.2	M	0.1	2	7.20		18.62		95.4		8.91		10.1		0.05		12	
HC1	11/28/2016	Fine	13:21	0.2	M	0.1	1	7.08	7.08	19.89	19.87	94.8	94.8	8.64	8.64	9.4	9.9	0.00	0.00	26	27
HC1	11/28/2016	Fine	13:21	0.2	M	0.1	2	7.08		19.85		94.8		8.64		10.3		0.00		28	
HC1	11/30/2016	Fine	13:15	0.2	M	0.1	1	7.24	7.23	19.49	19.52	96.0	95.7	8.80	8.77	15.6	15.4	0.05	0.05	12	14
HC1	11/30/2016	Fine	13:15	0.2	M	0.1	2	7.21		19.54		95.3		8.74		15.2		0.05		16	
HC1	12/2/2016	Cloudy	12:58	0.1	M	0.05	1	7.01	7.00	19.58	19.62	96.7	96.5	8.86	8.84	2.3	2.6	0.05	0.05	12	11
HC1	12/2/2016	Cloudy	12:58	0.1	M	0.05	2	6.99		19.65		96.3		8.82		2.9		0.05		10	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
HC2	11/22/2016	Cloudy	15:00	0.1	M	0.05	1	6.54	6.61	23.76	23.76	68.9	68.3	5.80	5.76	14.6	14.9	0.11	0.11	18	17
HC2	11/22/2016	Cloudy	15:00	0.1	M	0.05	2	6.68		23.75		67.7		5.72		15.2		0.11		16	
HC2	11/24/2016	Fine	13:00	0.1	M	0.05	1	6.54	6.56	19.82	19.83	81.4	79.9	7.42	7.28	5.0	5.0	0.09	0.09	18	19
HC2	11/24/2016	Fine	13:00	0.1	M	0.05	2	6.57		19.84		78.4		7.14		4.9		0.09		19	
HC2	11/26/2016	Rainy	12:42	0.1	M	0.05	1	7.10	7.09	18.88	18.89	78.8	78.4	7.32	7.28	6.7	6.7	0.08	0.08	22	23
HC2	11/26/2016	Rainy	12:42	0.1	M	0.05	2	7.08		18.89		77.9		7.24		6.6		0.08		24	
HC2	11/28/2016	Fine	13:36	0.1	M	0.05	1	7.05	7.07	20.04	20.04	80.2	80.2	7.28	7.13	11.1	10.8	0.20	0.17	11	12
HC2	11/28/2016	Fine	13:36	0.1	M	0.05	2	7.09		20.03		80.1		6.97		10.5		0.13		12	
HC2	11/30/2016	Fine	13:25	0.1	M	0.05	1	6.93	6.89	20.32	20.30	76.3	76.0	6.89	6.86	6.2	6.0	0.09	0.09	25	26
HC2	11/30/2016	Fine	13:25	0.1	M	0.05	2	6.84		20.27		75.6		6.83		5.8		0.09		26	
HC2	12/2/2016	Cloudy	14:00	0.1	M	0.05	1	6.86	6.87	20.13	20.03	74.9	73.6	6.72	6.65	36.0	34.9	0.11	0.10	28	29
HC2	12/2/2016	Cloudy	14:00	0.1	M	0.05	2	6.88		19.92		72.2		6.57		33.7		0.09		29	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
HC3	11/22/2016	Cloudy	15:20	1.2	M	0.6	1	6.92	6.84	24.61	24.58	62.2	64.7	5.16	5.36	12.8	12.4	0.16	0.16	NA	NA
HC3	11/22/2016	Cloudy	15:20	1.2	M	0.6	2	6.75		24.54		67.1		5.55		12.0		0.16		NA	
HC3	11/24/2016	Fine	13:16	0.5	M	0.25	1	6.82	6.87	21.85	21.83	72.6	71.4	6.30	6.22	8.8	9.0	0.13	0.13	NA	NA
HC3	11/24/2016	Fine	13:16	0.5	M	0.25	2	6.92		21.80		70.2		6.14		9.1		0.13		NA	
HC3	11/26/2016	Cloudy	14:11	0.6	M	0.3	1	6.91	6.92	18.97	18.97	69.1	68.9	6.42	6.40	9.2	9.4	0.14	0.14	NA	NA
HC3	11/26/2016	Cloudy	14:11	0.6	M	0.3	2	6.92		18.96		68.6		6.37		9.5		0.14		NA	
HC3	11/28/2016	Fine	13:50	1	M	0.5	1	7.13	7.13	23.05	23.01	93.6	93.7	8.02	8.04	15.7	16.0	0.12	0.12	NA	NA
HC3	11/28/2016	Fine	13:50	1	M	0.5	2	7.13		22.97		93.8		8.05		16.3		0.12		NA	
HC3	11/30/2016	Fine	13:50	0.6	M	0.3	1	7.35	7.35	22.39	22.39	103.6	103.6	8.98	8.98	27.8	28.2	0.13	0.13	NA	NA
HC3	11/30/2016	Fine	13:50	0.6	M	0.3	2	7.35		22.39		103.5		8.97		28.5		0.13		NA	
HC3	12/2/2016	Cloudy	13:30	0.6	M	0.3	1	7.99	8.00	22.28	22.28	125.8	126.2	10.97	10.99	25.5	25.8	0.14	0.14	NA	NA
HC3	12/2/2016	Cloudy	13:30	0.6	M	0.3	2	8.01		22.28		126.6		11.00		26.0		0.14		NA	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
LFT1	11/22/2016	Cloudy	13:47	0.1	M	0.05	1	6.72	6.73	23.77	23.78	77.1	77.2	6.51	6.51	2.9	3.0	0.09	0.10	10	11
LFT1	11/22/2016	Cloudy	13:47	0.1	M	0.05	2	6.74		23.78		77.2		6.51		3.1		0.10		11	
LFT1	11/24/2016	Fine	11:00	0.1	M	0.05	1	6.82	6.88	20.25	20.25	82.3	81.7	7.44	7.38	16.4	16.6	0.19	0.19	20	20
LFT1	11/24/2016	Fine	11:00	0.1	M	0.05	2	6.93		20.25		81.1		7.31		16.8		0.19		19	
LFT1	11/26/2016	Rainy	11:24	0.3	M	0.15	1	6.78	6.79	19.23	19.24	76.7	76.8	7.07	7.08	6.6	6.6	0.11	0.11	12	11
LFT1	11/26/2016	Rainy	11:24	0.3	M	0.15	2	6.79		19.24		76.9		7.09		6.5		0.10		10	
LFT1	11/28/2016	Fine	11:50	0.1	M	0.05	1	6.88	6.88	19.04	19.10	89.9	89.7	8.33	8.30	3.5	3.6	0.07	0.07	12	13
LFT1	11/28/2016	Fine	11:50	0.1	M	0.05	2	6.88		19.15		89.4		8.27		3.7		0.07		13	
LFT1	11/30/2016	Fine	11:05	0.1	M	0.05	1	7.02	7.00	19.37	19.38	87.2	87.5	8.03	8.06	3.4	3.3	0.11	0.11	15	16
LFT1	11/30/2016	Fine	11:05	0.1	M	0.05	2	6.97		19.39		87.7		8.09		3.2		0.11		16	
LFT1	12/2/2016	Cloudy	14:00	0.1	M	0.05	1	7.02	7.02	20.50	20.50	84.9	84.7	7.63	7.62	7.0	7.0	0.12	0.12	15	16
LFT1	12/2/2016	Cloudy	14:00	0.1	M	0.05	2	7.02		20.49		84.5		7.61		7.0		0.12		16	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
LFT2	11/22/2016	Cloudy	14:20	0.4	M	0.2	1	6.53	6.55	23.13	23.13	87.2	85.2	7.42	7.25	19.7	19.5	0.07	0.07	13	14
LFT2	11/22/2016	Cloudy	14:20	0.4	M	0.2	2	6.57		23.13		83.1		7.08		19.2		0.07		15	
LFT2	11/24/2016	Fine	11:34	0.4	M	0.2	1	6.74	6.75	20.48	20.46	69.9	70.3	6.29	6.33	13.3	13.9	0.12	0.12	28	28
LFT2	11/24/2016	Fine	11:34	0.4	M	0.2	2	6.76		20.43		70.6		6.36		14.4		0.12		27	
LFT2	11/26/2016	Rainy	12:10	0.5	M	0.25	1	7.13	7.13	19.49	19.50	74.3	73.8	6.82	6.77	23.8	23.7	0.09	0.09	NA	NA
LFT2	11/26/2016	Rainy	12:10	0.5	M	0.25	2	7.12		19.50		73.2		6.72		23.6		0.09		NA	
LFT2	11/28/2016	Fine	12:12	0.4	M	0.2	1	6.89	6.88	19.22	19.23	76.6	76.5	7.08	7.07	9.1	9.2	0.08	0.08	34	35
LFT2	11/28/2016	Fine	12:12	0.4	M	0.2	2	6.86		19.23		76.3		7.05		9.3		0.08		36	
LFT2	11/30/2016	Fine	11:55	0.3	M	0.15	1	6.89	6.88	19.90	19.79	70.8	70.1	6.44	6.40	14.3	15.5	0.06	0.06	16	16
LFT2	11/30/2016	Fine	11:55	0.3	M	0.15	2	6.86		19.67		69.4		6.36		16.7		0.06		15	
LFT2	12/2/2016	Cloudy	14:40	0.4	M	0.2	1	6.92	6.90	20.58	20.58	74.8	74.5	6.71	6.68	12.2	12.6	0.10	0.10	38	39
LFT2	12/2/2016	Cloudy	14:40	0.4	M	0.2	2	6.87		20.57		74.1		6.64		12.9		0.10		39	

Note: 1. Depth Ave.: (Except E.coli) "Depth-averaged" is calculated by taking the arithmetic means for the reading of the surface, middle and bottom depths

2. ND: Not Detected

3. NA: Not Applicable

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
LFT3	11/22/2016	Cloudy	13:56	0.9	M	0.45	1	8.61	8.71	25.39	25.36	117.1	117.0	9.55	9.58	35.0	33.0	0.10	0.08	NA	NA
LFT3	11/22/2016	Cloudy	13:56	0.9	M	0.45	2	8.80		25.32		116.9		9.60		31.0		0.05		NA	
LFT3	11/24/2016	Fine	11:12	1	M	0.5	1	8.69	8.72	20.92	20.93	119.7	119.8	10.62	10.63	62.1	61.7	0.11	0.11	NA	NA
LFT3	11/24/2016	Fine	11:12	1	M	0.5	2	8.75		20.93		119.9		10.64		61.3		0.11		NA	
LFT3	11/26/2016	Rainy	11:41	1	M	0.5	1	8.48	8.49	20.32	20.30	121.7	121.8	10.99	11.00	52.3	52.4	0.10	0.10	NA	NA
LFT3	11/26/2016	Rainy	11:41	1	M	0.5	2	8.50		20.28		121.8		11.00		52.5		0.10		NA	
LFT3	11/28/2016	Fine	11:59	1	M	0.5	1	9.02	9.03	18.90	18.95	126.1	126.9	11.71	11.79	31.2	33.2	0.10	0.10	NA	NA
LFT3	11/28/2016	Fine	11:59	1	M	0.5	2	9.04		18.99		127.7		11.86		35.2		0.10		NA	
LFT3	11/30/2016	Fine	11:25	0.9	M	0.45	1	9.08	9.09	19.04	19.06	135.0	135.6	12.50	12.55	35.7	38.2	0.10	0.10	NA	NA
LFT3	11/30/2016	Fine	11:25	0.9	M	0.45	2	9.10		19.07		136.1		12.60		40.7		0.10		NA	
LFT3	12/2/2016	Cloudy	14:15	1	M	0.5	1	9.58	9.59	20.94	21.00	159.6	160.1	14.23	14.25	39.4	38.5	0.10	0.10	NA	NA
LFT3	12/2/2016	Cloudy	14:15	1	M	0.5	2	9.60		21.06		160.6		14.27		37.6		0.10		NA	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
SSNV1	11/22/2016	Cloudy	11;15	0.2	M	0.1	1	6.58	6.59	23.92	23.93	77.8	77.0	6.54	6.47	24.2	24.1	0.08	0.07	22	21
SSNV1	11/22/2016	Cloudy	11:15	0.2	M	0.1	2	6.60		23.93		76.1		6.40		23.9		0.05		20	
SSNV1	11/24/2016	Fine	14:30	0.2	M	0.1	1	6.64	6.64	22.04	22.02	83.7	83.4	7.32	7.28	15.8	16.1	0.09	0.09	21	20
SSNV1	11/24/2016	Fine	14:30	0.2	M	0.1	2	6.64		22.00		83.0		7.24		16.3		0.09		19	
SSNV1	11/26/2016	Cloudy	15:30	0.2	M	0.1	1	6.86	6.86	19.13	19.13	77.7	77.5	7.19	7.17	5.2	5.3	0.09	0.09	22	23
SSNV1	11/26/2016	Cloudy	15:30	0.2	M	0.1	2	6.85		19.12		77.2		7.15		5.3		0.09		23	
SSNV1	11/28/2016	Fine	15:04	0.2	M	0.1	1	6.73	6.72	21.29	21.30	90.1	89.8	7.98	7.95	4.1	4.3	0.10	0.10	15	16
SSNV1	11/28/2016	Fine	15:04	0.2	M	0.1	2	6.70		21.31		89.4		7.92		4.5		0.10		17	
SSNV1	11/30/2016	Fine	15:00	0.2	M	0.1	1	6.68	6.67	22.21	22.23	82.2	81.9	7.14	7.13	7.4	7.8	0.07	0.07	16	16
SSNV1	11/30/2016	Fine	15:00	0.2	M	0.1	2	6.65		22.24		81.5		7.12		8.2		0.07		15	
SSNV1	12/2/2016	Cloudy	10:25	0.2	M	0.1	1	6.56	6.55	19.80	19.80	76.6	76.8	6.98	7.00	15.9	16.0	0.07	0.07	16	16
SSNV1	12/2/2016	Cloudy	10:25	0.2	M	0.1	2	6.54		19.80		77.0		7.02		16.0		0.07		15	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
SSNV2	11/22/2016	Cloudy	10:50	1	M	0.5	1	6.47	6.49	23.82	23.82	67.5	67.0	5.69	5.65	17.3	17.1	0.07	0.07	NA	NA
SSNV2	11/22/2016	Cloudy	10:50	1	M	0.5	2	6.51		23.82		66.4		5.60		16.8		0.07		NA	
SSNV2	11/24/2016	Fine	14:00	1	M	0.5	1	6.49	6.49	21.41	21.43	77.9	77.4	6.88	6.84	4.3	4.6	0.06	0.06	NA	NA
SSNV2	11/24/2016	Fine	14:00	1	M	0.5	2	6.48		21.44		76.8		6.79		4.8		0.06		NA	
SSNV2	11/26/2016	Cloudy	15:12	1	M	0.5	1	6.63	6.63	19.13	19.14	72.9	72.8	6.75	6.74	6.4	6.5	0.03	0.03	NA	NA
SSNV2	11/26/2016	Cloudy	15:12	1	M	0.5	2	6.62		19.14		72.6		6.72		6.6		0.03		NA	
SSNV2	11/28/2016	Fine	14:45	0.7	M	0.35	1	6.76	6.71	21.39	21.35	78.7	79.2	6.97	7.01	3.5	3.6	0.05	0.05	NA	NA
SSNV2	11/28/2016	Fine	14:45	0.7	M	0.35	2	6.65		21.30		79.6		7.05		3.6		0.04		NA	
SSNV2	11/30/2016	Fine	14:45	0.9	M	0.45	1	6.50	6.46	21.56	21.61	69.4	68.6	6.11	6.03	10.7	9.8	0.07	0.07	NA	NA
SSNV2	11/30/2016	Fine	14:45	0.9	M	0.45	2	6.41		21.66		67.7		5.94		8.9		0.07		NA	
SSNV2	12/2/2016	Cloudy	10:00	1	M	0.5	1	6.48	6.44	19.38	19.39	69.2	68.4	6.33	6.27	7.3	6.8	0.06	0.06	NA	NA
SSNV2	12/2/2016	Cloudy	10:00	1	M	0.5	2	6.39		19.40		67.6		6.20		6.3		0.06		NA	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
TW1	11/22/2016	Cloudy	12:05	0.1	M	0.05	1	6.52	6.58	23.38	23.38	96.3	96.2	8.19	8.17	17.9	16.5	0.02	0.03	43	44
TW1	11/22/2016	Cloudy	12:05	0.1	M	0.05	2	6.64		23.38		96.1		8.15		15.0		0.04		44	
TW1	11/24/2016	Fine	10:06	0.1	M	0.05	1	6.54	6.55	18.36	18.36	95.3	95.2	8.96	8.95	3.4	3.4	0.04	0.04	32	33
TW1	11/24/2016	Fine	10:06	0.1	M	0.05	2	6.55		18.36		95.0		8.93		3.4		0.04		34	
TW1	11/26/2016	Rainy	10:24	0.1	M	0.05	1	6.59	6.60	19.18	19.18	94.3	94.2	8.72	8.71	4.9	5.1	0.04	0.04	32	33
TW1	11/26/2016	Rainy	10:24	0.1	M	0.05	2	6.60		19.17		94.1		8.69		5.2		0.04		34	
TW1	11/28/2016	Fine	10:58	0.1	M	0.05	1	7.12	6.99	18.10	18.09	97.2	97.0	9.18	9.17	3.1	3.3	0.04	0.04	20	19
TW1	11/28/2016	Fine	10:58	0.1	M	0.05	2	6.86		18.08		96.8		9.15		3.4		0.04		18	
TW1	11/30/2016	Fine	10:20	0.1	M	0.05	1	6.78	6.74	18.00	18.04	106.1	105.6	10.05	9.94	6.8	6.7	0.04	0.04	30	31
TW1	11/30/2016	Fine	10:20	0.1	M	0.05	2	6.69		18.07		105.0		9.83		6.6		0.04		31	
TW1	12/2/2016	Cloudy	15:30	0.3	M	0.15	1	6.75	6.74	19.89	19.90	96.9	96.9	8.83	8.82	3.2	3.2	0.04	0.04	32	31
TW1	12/2/2016	Cloudy	15:30	0.3	M	0.15	2	6.72		19.90		96.9		8.81		3.1		0.04		30	

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement													
								pH		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Time taken for the debris to be wash away (s)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	value	Ave	Value	Ave.
TW2A	11/22/2016	Cloudy	12:22	0.3	M	0.15	1	6.33	6.33	23.32	23.31	93.0	92.9	7.94	7.92	6.4	6.5	0.03	0.03	15	14
TW2A	11/22/2016	Cloudy	12:22	0.3	M	0.15	2	6.33		23.30		92.8		7.89		6.5		0.03		13	
TW2A	11/24/2016	Fine	10:30	0.3	M	0.15	1	6.41	6.41	18.58	18.58	93.9	93.8	8.79	8.78	5.6	5.7	0.04	0.05	23	23
TW2A	11/24/2016	Fine	10:30	0.3	M	0.15	2	6.40		18.58		93.7		8.77		5.8		0.05		23	
TW2A	11/26/2016	Rainy	10:43	0.3	M	0.15	1	6.46	6.46	19.38	19.37	93.1	92.9	8.57	8.56	7.6	7.4	0.03	0.03	52	52
TW2A	11/26/2016	Rainy	10:43	0.3	M	0.15	2	6.45		19.36		92.7		8.54		7.2		0.03		51	
TW2A	11/28/2016	Fine	11:11	0.4	M	0.2	1	6.89	6.80	18.22	18.27	95.5	95.2	8.98	8.95	3.5	3.6	0.00	0.00	30	29
TW2A	11/28/2016	Fine	11:11	0.4	M	0.2	2	6.71		18.32		94.8		8.92		3.6		0.00		27	
TW2A	11/30/2016	Fine	10:05	0.4	M	0.2	1	6.81	6.76	18.07	18.04	95.1	94.9	8.97	8.96	18.4	18.2	0.04	0.04	26	27
TW2A	11/30/2016	Fine	10:05	0.4	M	0.2	2	6.70		18.01		94.7		8.94		18.0		0.04		28	
TW2A	12/2/2016	Cloudy	15:05	0.4	M	0.2	1	6.85	6.85	19.97	19.97	96.5	96.5	8.79	8.79	3.2	3.3	0.04	0.04	40	41
TW2A	12/2/2016	Cloudy	15:05	0.4	M	0.2	2	6.84		19.96		96.5		8.78		3.3		0.03		42	

Note: 1. Depth Ave.: (Except E.coli) "Depth-averaged" is calculated by taking the arithmetic means for the reading of the surface, middle and bottom depths

2. ND: Not Detected

3. NA: Not Applicable

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
HC1	11/22/2016	Cloudy	14:41	0.2	M	0.1	1	16.5	17.3	3	2.5	9	9	11000	11958	0.122	0.123	0.014	0.015	0.335	0.326	0.59	0.56	0.042	0.042	0.13	0.12
HC1	11/22/2016	Cloudy	14:41	0.2	M	0.1	2	18.1		2		9		13000		0.123		0.015		0.316		0.53		0.042		0.11	
HC1	11/24/2016	Fine	12:35	0.1	M	0.05	1	14.4	14.3	1	1.5	9	9.5	13000	13964	0.111	0.111	0.006	0.007	0.245	0.243	0.26	0.27	0.046	0.045	0.10	0.10
HC1	11/24/2016	Fine	12:35	0.1	M	0.05	2	14.1		2		10		15000		0.111		0.007		0.240		0.27		0.043		0.09	
HC1	11/26/2016	Cloudy	13:49	0.2	M	0.1	1	8.3	8.7	<1	<1	7	6.5	30000	27928	0.135	0.134	0.021	0.021	0.402	0.411	0.41	0.44	0.065	0.064	0.11	0.11
HC1	11/26/2016	Cloudy	13:49	0.2	M	0.1	2	9.1		<1		6		26000		0.133		0.021		0.420		0.47		0.062		0.11	
HC1	11/28/2016	Fine	13:21	0.2	M	0.1	1	6.7	7.2	<1	<1	4	4	13000	13964	0.167	0.165	0.021	0.021	0.351	0.350	0.73	0.73	0.067	0.064	0.11	0.11
HC1	11/28/2016	Fine	13:21	0.2	M	0.1	2	7.6		<1		4		15000		0.163		0.020		0.348		0.72		0.061		0.11	
HC1	11/30/2016	Fine	13:15	0.2	M	0.1	1	17.6	16.6	1	1	6	6	6100	5792	0.175	0.172	0.023	0.002	0.341	0.002	0.42	0.41	0.050	0.050	0.10	0.10
HC1	11/30/2016	Fine	13:15	0.2	M	0.1	2	15.6		<1		6		5500		0.168		0.019		0.345		0.39		0.049		0.09	
HC1	12/2/2016	Cloudy	12:58	0.1	M	0.05	1	3.2	3.0	<1	1	<2	<2	2900	3094	0.124	0.119	0.020	0.020	0.311	0.313	0.27	0.29	0.048	0.049	0.08	0.08
HC1	12/2/2016	Cloudy	12:58	0.1	M	0.05	2	2.8		1		<2		3300		0.113		0.020		0.314		0.30		0.050		0.08	
HC2	11/22/2016	Cloudy	15:00	0.1	M	0.05	1	31.6	32.4	30	30.5	55	56.5	820000	863829	1.300	1.290	<0.002	0.004	0.005	0.005	3.29	3.34	0.018	0.017	0.40	0.41
HC2	11/22/2016	Cloudy	15:00	0.1	M	0.05	2	33.1		31		58		910000		1.280		0.005		0.004		3.38		0.016		0.41	
HC2	11/24/2016	Fine	13:00	0.1	M	0.05	1	6.4	6.7	10	10	19	19.5	24000	26382	0.993	1.002	0.074	0.075	0.616	0.616	1.67	1.73	0.082	0.082	0.31	0.31
HC2	11/24/2016	Fine	13:00	0.1	M	0.05	2	7.0		10		20		29000		1.010		0.076		0.615		1.79		0.081		0.30	
HC2	11/26/2016	Rainy	12:42	0.1	M	0.05	1	9.4	8.7	4	4	18	18	230000	303315	2.100	2.115	0.112	0.114	0.543	0.532	3.96	3.90	0.136	0.138	0.26	0.25
HC2	11/26/2016	Rainy	12:42	0.1	M	0.05	2	8.0		4		18		400000		2.130		0.115		0.520		3.84		0.140		0.23	
HC2	11/28/2016	Fine	13:36	0.1	M	0.05	1	339.0	339.0	254	254.5	649	647.5	780000	794858	1.940	1.975	0.006	0.006	<0.002	<0.002	65.70	64.85	1.150	1.185	8.97	8.97
HC2	11/28/2016	Fine	13:36	0.1	M	0.05	2	339.0		255		646		810000		2.010		0.005		<0.002		64.00		1.220		8.96	
HC2	11/30/2016	Fine	13:25	0.1	M	0.05	1	43.3	44.3	7	7	26	24.5	230000	191833	1.280	1.285	0.072	0.068	0.587	0.595	2.70	2.61	0.138	0.141	0.23	0.22
HC2	11/30/2016	Fine	13:25	0.1	M	0.05	2	45.3		7		23		160000		1.290		0.064		0.603		2.52		0.143		0.21	
HC2	12/2/2016	Cloudy	14:00	0.1	M	0.05	1	72.0	74.4	63	62.5	339	334.5	180000	194422	1.510	1.520	0.079	0.077	0.573	0.585	13.60	13.80	0.680	0.663	2.43	2.45
HC2	12/2/2016	Cloudy	14:00	0.1	M	0.05	2	76.8		62		330		210000		1.530		0.075		0.597		14.00		0.646		2.46	
HC3	11/22/2016	Cloudy	15:20	1.2	M	0.6	1	26.4	27.0	6	7	36	36	380	404	7.480	7.440	0.135	0.138	0.322	0.337	8.99	8.88	0.615	0.614	0.92	0.93
HC3	11/22/2016	Cloudy	15:20	1.2	M	0.6	2	27.5		8		36		430		7.400		0.140		0.352		8.76		0.613		0.93	
HC3	11/24/2016	Fine	13:16	0.5	M	0.25	1	18.8	18.3	6	6	29	29	460	484	7.580	7.600	0.082	0.082	0.359	0.352	8.10	8.24	0.657	0.661	0.91	0.91
HC3	11/24/2016	Fine	13:16	0.5	M	0.25	2	17.7		6		29		510		7.620		0.082		0.345		8.38		0.665		0.91	
HC3	11/26/2016	Cloudy	14:11	0.6	M	0.3	1	16.1	15.2	5	5	34	34	670	732	9.280	9.165	0.079	0.081	0.273	0.273	11.50	11.60	0.705	0.707	0.95	0.95
HC3	11/26/2016	Cloudy	14:11	0.6	M	0.3	2	14.3		5		34		800		9.050		0.083		0.272		11.70		0.708		0.95	
HC3	11/28/2016	Fine	13:50	1	M	0.5	1	32.5	34.0	6	6	38	37.5	2300	3033	7.070	7.055	0.096	0.097	0.559	0.555	10.80	10.60	0.471	0.476	0.81	0.83
HC3	11/28/2016	Fine	13:50	1	M	0.5	2	35.4		6		37		4000		7.040		0.098		0.551		10.40		0.480		0.84	
HC3	11/30/2016	Fine	13:50	0.6	M	0.3	1	46.6	44.7	7	7	42	40.5	1900	2223	7.480	7.575	0.115	0.116	0.558	0.559	9.53	9.77	0.449	0.446	0.87	0.85
HC3	11/30/2016	Fine	13:50	0.6	M	0.3	2	42.8		7		39		2600		7.670		0.116		0.559		10.00		0.443		0.82	
HC3	12/2/2016	Cloudy	13:30	0.6	M	0.3	1	41.2	43.0	12	12	57	58.5	6600	6797	7.180	7.240	0.174	0.172	0.782	0.778	10.80	10.70	0.280	0.281	0.90	0.90
HC3	12/2/2016	Cloudy	13:30	0.6	M	0.3	2	44.8		12		60		7000		7.300		0.169		0.774		10.60		0.281		0.90	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis															
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
HC1	11/22/2016	Cloudy	14:41	0.2	M	0.1	1	<1	<1	<1	1	4	4	3	3.5	<1	<1	<1	<1	<10	<10	24	29	<1	<1
HC1	11/22/2016	Cloudy	14:41	0.2	M	0.1	2	<1		1		4		4		<1		<1		<10		34		<1	
HC1	11/24/2016	Fine	12:35	0.1	M	0.05	1	<1	<1	<1	<1	8	5.5	2	1.5	<1	<1	<1	<1	<10	<10	26	41	<1	<1
HC1	11/24/2016	Fine	12:35	0.1	M	0.05	2	<1		<1		3		1		<1		<1		<10		56		<1	
HC1	11/26/2016	Cloudy	13:49	0.2	M	0.1	1	<1	<1	<1	<1	3	3.5	4	4	<1	<1	<1	<1	<10	<10	32	32	<1	<1
HC1	11/26/2016	Cloudy	13:49	0.2	M	0.1	2	<1		<1		4		4		<1		<1		<10		32		<1	
HC1	11/28/2016	Fine	13:21	0.2	M	0.1	1	<1	<1	<1	<1	2	2	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<1	<1
HC1	11/28/2016	Fine	13:21	0.2	M	0.1	2	<1		<1		2		<1		<1		<1		<10		<10		<1	
HC1	11/30/2016	Fine	13:15	0.2	M	0.1	1	<1	<1	<1	<1	8	8	2	2	<1	<1	1	<1	<10	<10	20	22	<1	<1
HC1	11/30/2016	Fine	13:15	0.2	M	0.1	2	<1		<1		8		2		<1		1		<10		24		<1	
HC1	12/2/2016	Cloudy	12:58	0.1	M	0.05	1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<1	<1
HC1	12/2/2016	Cloudy	12:58	0.1	M	0.05	2	<1		<1		<1		<1		<1		<1		<10		<10		<1	
HC2	11/22/2016	Cloudy	15:00	0.1	M	0.05	1	<1	<1	<1	<1	4	4	1	1.5	<1	<1	2	2	<10	<10	38	38.5	<1	<1
HC2	11/22/2016	Cloudy	15:00	0.1	M	0.05	2	<1		<1		4		2		<1		2		<10		39		<1	
HC2	11/24/2016	Fine	13:00	0.1	M	0.05	1	<1	<1	<1	<1	2	3	<1	<1	<1	<1	1	1	<10	<10	53	35	<1	<1
HC2	11/24/2016	Fine	13:00	0.1	M	0.05	2	<1		<1		4		<1		<1		1		<10		17		<1	
HC2	11/26/2016	Rainy	12:42	0.1	M	0.05	1	<1	<1	<1	<1	2	2	2	2	<1	<1	2	2	<10	<10	26	26	<1	<1
HC2	11/26/2016	Rainy	12:42	0.1	M	0.05	2	<1		<1		2		2		<1		2		<10		26		<1	
HC2	11/28/2016	Fine	13:36	0.1	M	0.05	1	<1	<1	2	1.5	26	26	8	5	<1	<1	14	13.5	<10	<10	112	101.5	<1	<1
HC2	11/28/2016	Fine	13:36	0.1	M	0.05	2	<1		1		26		2		<1		13		<10		91		<1	
HC2	11/30/2016	Fine	13:25	0.1	M	0.05	1	<1	<1	<1	<1	2	2	<1	<1	<1	<1	3	3	<10	<10	18	18.5	<1	<1
HC2	11/30/2016	Fine	13:25	0.1	M	0.05	2	<1		<1		2		<1		<1		3		<10		19		<1	
HC2	12/2/2016	Cloudy	14:00	0.1	M	0.05	1	<1	<1	<1	<1	12	12	2	2	<1	<1	10	9.5	<10	<10	51	49	<1	<1
HC2	12/2/2016	Cloudy	14:00	0.1	M	0.05	2	<1		<1		12		2		<1		9		<10		47		<1	
HC3	11/22/2016	Cloudy	15:20	1.2	M	0.6	1	<1	<1	<1	<1	2	2	2	2	<1	<1	2	2	<10	<10	33	30.5	<1	<1
HC3	11/22/2016	Cloudy	15:20	1.2	M	0.6	2	<1		<1		2		2		<1		2		<10		28		<1	
HC3	11/24/2016	Fine	13:16	0.5	M	0.25	1	<1	<1	<1	<1	5	5	2	2	<1	<1	<1	<1	<10	<10	28	80	<1	<1
HC3	11/24/2016	Fine	13:16	0.5	M	0.25	2	<1		<1		5		2		<1		<1		<10		132		<1	
HC3	11/26/2016	Cloudy	14:11	0.6	M	0.3	1	<1	<1	<1	<1	5	5.5	3	3	<1	<1	2	2	<10	<10	48	52	<1	<1
HC3	11/26/2016	Cloudy	14:11	0.6	M	0.3	2	<1		<1		6		3		<1		2		<10		56		<1	
HC3	11/28/2016	Fine	13:50	1	M	0.5	1	<1	<1	<1	<1	5	5	4	4	<1	<1	2	2	<10	<10	50	50.5	<1	<1
HC3	11/28/2016	Fine	13:50	1	M	0.5	2	<1		<1		5		4		<1		2		<10		51		<1	
HC3	11/30/2016	Fine	13:50	0.6	M	0.3	1	<1	<1	2	1.5	10	9	7	6.5	<1	<1	3	3	<10	<10	66	64	<1	<1
HC3	11/30/2016	Fine	13:50	0.6	M	0.3	2	<1		1		8		6		<1		3		<10		62		<1	
HC3	12/2/2016	Cloudy	13:30	0.6	M	0.3	1	<1	<1	<1	<1	9	9	4	4	<1	<1	3	2.5	<10	<10	57	61.5	<1	<1
HC3	12/2/2016	Cloudy	13:30	0.6	M	0.3	2	<1		<1		9		4		<1		2		<10		66		<1	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																			
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
LFT1	11/22/2016	Cloudy	13:47	0.1	M	0.05	1	2.4	2.6	3	3	11	12.5	58000	60448	2.570	2.575	0.234	0.236	0.747	0.750	2.88	2.95	0.397	0.398	0.49	0.50
LFT1	11/22/2016	Cloudy	13:47	0.1	M	0.05	2	2.7		3		14		63000		2.580		0.238		0.752		3.01		0.399		0.50	
LFT1	11/24/2016	Fine	11:00	0.1	M	0.05	1	5.0	5.9	7	7.5	20	19	140000	124097	8.650	8.585	0.257	0.258	0.681	0.680	8.69	8.66	0.652	0.654	0.85	0.85
LFT1	11/24/2016	Fine	11:00	0.1	M	0.05	2	6.8		8		18		110000		8.520		0.259		0.679		8.62		0.656		0.84	
LFT1	11/26/2016	Rainy	11:24	0.3	M	0.15	1	9.1	8.0	3	3	15	15	46000	56338	2.210	2.210	0.180	0.179	0.833	0.829	3.58	3.56	0.254	0.255	0.38	0.39
LFT1	11/26/2016	Rainy	11:24	0.3	M	0.15	2	6.9		3		15		69000		2.210		0.177		0.825		3.53		0.255		0.40	
LFT1	11/28/2016	Fine	11:50	0.1	M	0.05	1	2.0	1.8	3	2.5	15	14.5	15000	19748	1.640	1.650	0.074	0.074	0.761	0.758	4.58	4.85	0.229	0.229	0.35	0.36
LFT1	11/28/2016	Fine	11:50	0.1	M	0.05	2	1.6		2		14		26000		1.660		0.074		0.754		5.12		0.229		0.36	
LFT1	11/30/2016	Fine	11:05	0.1	M	0.05	1	7.0	7.1	3	3.5	12	12.5	190000	217945	2.780	2.800	0.154	0.152	0.900	0.908	3.81	3.74	0.386	0.386	0.49	0.49
LFT1	11/30/2016	Fine	11:05	0.1	M	0.05	2	7.2		4		13		250000		2.820		0.150		0.915		3.66		0.385		0.48	
LFT1	12/2/2016	Cloudy	14:00	0.1	M	0.05	1	11.0	10.3	4	4	9	9.5	3700	3387	3.410	3.410	0.243	0.246	1.020	1.025	3.53	3.56	0.376	0.375	0.54	0.54
LFT1	12/2/2016	Cloudy	14:00	0.1	M	0.05	2	9.5		4		10		3100		3.410		0.248		1.030		3.59		0.374		0.54	
LFT2	11/22/2016	Cloudy	14:20	0.4	M	0.2	1	38.0	38.3	4	4.5	19	19.5	13000	16125	2.200	2.250	0.103	0.102	0.411	0.413	3.70	3.57	0.840	0.838	1.26	1.27
LFT2	11/22/2016	Cloudy	14:20	0.4	M	0.2	2	38.6		5		20		20000		2.300		0.101		0.415		3.44		0.835		1.28	
LFT2	11/24/2016	Fine	11:34	0.4	M	0.2	1	21.0	22.0	13	12.5	25	30	23000	19774	6.040	6.110	0.058	0.059	0.252	0.257	8.73	8.63	1.310	1.330	2.00	2.02
LFT2	11/24/2016	Fine	11:34	0.4	M	0.2	2	22.9		12		35		17000		6.180		0.060		0.261		8.53		1.350		2.04	
LFT2	11/26/2016	Rainy	12:10	0.5	M	0.25	1	33.7	33.5	5	5	25	27.5	18000	28142	4.200	4.135	0.101	0.109	0.537	0.540	5.72	5.76	0.822	0.802	1.19	1.21
LFT2	11/26/2016	Rainy	12:10	0.5	M	0.25	2	33.2		5		30		44000		4.070		0.117		0.543		5.79		0.781		1.22	
LFT2	11/28/2016	Fine	12:12	0.4	M	0.2	1	15.6	15.7	4	4	14	14.5	8600	8138	3.120	3.175	0.095	0.098	0.446	0.444	5.16	5.33	0.852	0.855	1.08	1.09
LFT2	11/28/2016	Fine	12:12	0.4	M	0.2	2	15.7		4		15		7700		3.230		0.100		0.442		5.49		0.858		1.09	
LFT2	11/30/2016	Fine	11:55	0.3	M	0.15	1	20.4	19.9	7	7	24	23	70000	77136	6.320	6.305	0.077	0.075	0.294	0.296	7.57	7.61	1.190	1.210	1.68	1.68
LFT2	11/30/2016	Fine	11:55	0.3	M	0.15	2	19.4		7		22		85000		6.290		0.073		0.297		7.64		1.230		1.68	
LFT2	12/2/2016	Cloudy	14:40	0.4	M	0.2	1	32.3	31.0	6	5.5	21	20.5	26000	23917	5.580	5.580	0.113	0.116	0.358	0.354	7.22	7.23	1.140	1.130	1.51	1.54
LFT2	12/2/2016	Cloudy	14:40	0.4	M	0.2	2	29.7		5		20		22000		5.580		0.119		0.349		7.24		1.120		1.56	
LFT3	11/22/2016	Cloudy	13:56	0.9	M	0.45	1	94.2	94.4	20	17	99	93	2800	3130	0.072	0.068	0.002	0.002	0.004	0.006	3.66	3.55	<0.002	0.002	0.31	0.30
LFT3	11/22/2016	Cloudy	13:56	0.9	M	0.45	2	94.6		14		87		3500		0.064		<0.002		0.007		3.44		0.002		0.29	
LFT3	11/24/2016	Fine	11:12	1	M	0.5	1	58.4	60.3	20	21	86	87	1600	1649	0.043	0.045	<0.002	0.002	<0.002	<0.002	3.17	3.15	0.002	0.002	0.24	0.24
LFT3	11/24/2016	Fine	11:12	1	M	0.5	2	62.2		22		88		1700		0.047		0.002		<0.002		3.13		0.002		0.24	
LFT3	11/26/2016	Rainy	11:41	1	M	0.5	1	80.0	82.6	24	23	88	87.5	1700	1977	0.045	0.046	<0.002	<0.002	<0.002	<0.002	3.80	3.71	0.004	0.003	0.24	0.25
LFT3	11/26/2016	Rainy	11:41	1	M	0.5	2	85.2		22		87		2300		0.046		<0.002		<0.002		3.62		0.002		0.25	
LFT3	11/28/2016	Fine	11:59	1	M	0.5	1	68.2	65.1	22	22	82	79.5	2500	2449	0.037	0.039	<0.002	<0.002	<0.002	<0.002	4.72	4.78	0.005	0.004	0.24	0.24
LFT3	11/28/2016	Fine	11:59	1	M	0.5	2	62.0		22		77		2400		0.041		<0.002		<0.002		4.83		0.002		0.24	
LFT3	11/30/2016	Fine	11:25	0.9	M	0.45	1	72.2	70.1	19	19.5	81	82	4400	4783	0.054	0.053	<0.002	<0.002	<0.002	<0.002	3.16	3.09	0.003	0.006	0.20	0.20
LFT3	11/30/2016	Fine	11:25	0.9	M	0.45	2	68.0		20		83		5200		0.051		<0.002		<0.002		3.02		0.009		0.19	
LFT3	12/2/2016	Cloudy	14:15	1	M	0.5	1	64.4	63.0	18	18	94	94.5	6400	6145	0.086	0.080	<0.002	<0.002	<0.002	<0.002	3.01	3.00	0.007	0.007	0.20	0.20
LFT3	12/2/2016	Cloudy	14:15	1	M	0.5	2	61.6		18		95		5900		0.074		<0.002		<0.002		2.98		0.007		0.20	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
LFT1	11/22/2016	Cloudy	13:47	0.1	M	0.05	1	<1	<1	<1	<1	3	3.5	<1	<1	<1	<1	1	1	<10	<10	24	32	<1	<1
LFT1	11/22/2016	Cloudy	13:47	0.1	M	0.05	2	<1		<1		4		<1		<1		1		<10		40		<1	
LFT1	11/24/2016	Fine	11:00	0.1	M	0.05	1	<1	<1	<1	<1	3	3	<1	<1	<1	<1	<1	<1	<10	<10	549	299	<1	<1
LFT1	11/24/2016	Fine	11:00	0.1	M	0.05	2	<1		<1		3		<1		<1		<1		<10		49		<1	
LFT1	11/26/2016	Rainy	11:24	0.3	M	0.15	1	<1	<1	<1	<1	4	4	2	2	<1	<1	1	1	<10	<10	42	40	<1	<1
LFT1	11/26/2016	Rainy	11:24	0.3	M	0.15	2	<1		<1		4		2		<1		1		<10		38		<1	
LFT1	11/28/2016	Fine	11:50	0.1	M	0.05	1	<1	<1	<1	<1	2	2.5	1	1	<1	<1	<1	<1	<10	<10	23	25	<1	<1
LFT1	11/28/2016	Fine	11:50	0.1	M	0.05	2	<1		<1		3		1		<1		<1		<10		27		<1	
LFT1	11/30/2016	Fine	11:05	0.1	M	0.05	1	<1	<1	<1	<1	8	6.5	3	2	<1	<1	2	2	<10	<10	63	48	<1	<1
LFT1	11/30/2016	Fine	11:05	0.1	M	0.05	2	<1		<1		5		1		<1		2		<10		33		<1	
LFT1	12/2/2016	Cloudy	14:00	0.1	M	0.05	1	<1	<1	<1	<1	2	3	2	2.5	<1	<1	1	1.5	<10	<10	19	25.5	<1	<1
LFT1	12/2/2016	Cloudy	14:00	0.1	M	0.05	2	<1		<1		4		3		<1		2		<10		32		<1	
LFT2	11/22/2016	Cloudy	14:20	0.4	M	0.2	1	<1	<1	<1	<1	76	80.5	10	10.5	<1	<1	1	1	<10	<10	197	197	<1	<1
LFT2	11/22/2016	Cloudy	14:20	0.4	M	0.2	2	<1		<1		85		11		<1		1		<10		197		<1	
LFT2	11/24/2016	Fine	11:34	0.4	M	0.2	1	<1	<1	<1	<1	36	42.5	4	4.5	<1	<1	<1	<1	<10	<10	96	116	<1	<1
LFT2	11/24/2016	Fine	11:34	0.4	M	0.2	2	<1		<1		49		5		<1		<1		<10		136		<1	
LFT2	11/26/2016	Rainy	12:10	0.5	M	0.25	1	<1	<1	<1	<1	57	54.5	11	10.5	<1	<1	2	2	<10	<10	163	166	<1	<1
LFT2	11/26/2016	Rainy	12:10	0.5	M	0.25	2	<1		<1		52		10		<1		2		<10		169		<1	
LFT2	11/28/2016	Fine	12:12	0.4	M	0.2	1	<1	<1	<1	<1	29	28.5	5	5	<1	<1	<1	<1	<10	<10	77	83.5	<1	<1
LFT2	11/28/2016	Fine	12:12	0.4	M	0.2	2	<1		<1		28		5		<1		<1		<10		90		<1	
LFT2	11/30/2016	Fine	11:55	0.3	M	0.15	1	<1	<1	<1	<1	51	48	10	9	<1	<1	2	2	<10	<10	143	130.5	<1	<1
LFT2	11/30/2016	Fine	11:55	0.3	M	0.15	2	<1		<1		45		8		<1		2		<10		118		<1	
LFT2	12/2/2016	Cloudy	14:40	0.4	M	0.2	1	<1	<1	<1	<1	56	55.5	2	2	<1	<1	2	2	<10	<10	160	163	<1	<1
LFT2	12/2/2016	Cloudy	14:40	0.4	M	0.2	2	<1		<1		55		2		<1		2		<10		166		<1	
LFT3	11/22/2016	Cloudy	13:56	0.9	M	0.45	1	<1	<1	<1	<1	6	6	5	4.5	<1	<1	<1	<1	<10	<10	22	21.5	<1	<1
LFT3	11/22/2016	Cloudy	13:56	0.9	M	0.45	2	<1		<1		6		4		<1		<1		<10		21		<1	
LFT3	11/24/2016	Fine	11:12	1	M	0.5	1	<1	<1	<1	<1	6	6	3	3	<1	<1	<1	<1	<10	<10	50	41.5	<1	<1
LFT3	11/24/2016	Fine	11:12	1	M	0.5	2	<1		<1		6		3		<1		<1		<10		33		<1	
LFT3	11/26/2016	Rainy	11:41	1	M	0.5	1	<1	<1	<1	<1	9	8.5	8	7.5	<1	<1	<1	<1	<10	<10	58	53	<1	<1
LFT3	11/26/2016	Rainy	11:41	1	M	0.5	2	<1		<1		8		7		<1		<1		<10		48		<1	
LFT3	11/28/2016	Fine	11:59	1	M	0.5	1	<1	<1	<1	<1	6	6	6	6	<1	<1	<1	<1	<10	<10	27	27.5	<1	<1
LFT3	11/28/2016	Fine	11:59	1	M	0.5	2	<1		<1		6		6		<1		<1		<10		28		<1	
LFT3	11/30/2016	Fine	11:25	0.9	M	0.45	1	<1	<1	<1	<1	6	6	4	4	<1	<1	1	1	<10	<10	25	32.5	<1	<1
LFT3	11/30/2016	Fine	11:25	0.9	M	0.45	2	<1		<1		6		4		<1		<1		<10		40		<1	
LFT3	12/2/2016	Cloudy	14:15	1	M	0.5	1	<1	<1	<1	<1	9	9	4	4	<1	<1	<1	1.5	<10	<10	64	60.5	<1	<1
LFT3	12/2/2016	Cloudy	14:15	1	M	0.5	2	<1		<1		9		4		<1		2		<10		57		<1	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
SSNV1	11/22/2016	Cloudy	11;15	0.2	M	0.1	1	42.8	42.9	18	18.5	48	46	130000	144222	2.920	2.910	0.214	0.216	0.831	0.827	5.62	5.69	1.790	1.775	3.09	3.17
SSNV1	11/22/2016	Cloudy	11:15	0.2	M	0.1	2	43.0		19		44		160000		2.900		0.218		0.822		5.75		1.760		3.24	
SSNV1	11/24/2016	Fine	14:30	0.2	M	0.1	1	57.4	55.6	12	11	24	26	15000	13416	1.520	1.510	0.173	0.172	0.907	0.933	3.36	3.21	1.140	1.145	2.11	2.14
SSNV1	11/24/2016	Fine	14:30	0.2	M	0.1	2	53.7		10		28		12000		1.500		0.171		0.959		3.05		1.150		2.16	
SSNV1	11/26/2016	Cloudy	15:30	0.2	M	0.1	1	11.3	12.1	4	4	16	16	57000	70420	5.980	5.945	0.248	0.247	1.130	1.105	7.78	7.52	1.120	1.125	1.34	1.34
SSNV1	11/26/2016	Cloudy	15:30	0.2	M	0.1	2	12.8		4		16		87000		5.910		0.245		1.080		7.26		1.130		1.34	
SSNV1	11/28/2016	Fine	15:04	0.2	M	0.1	1	8.8	8.1	3	3	9	9.5	8900	10334	1.410	1.395	0.152	0.153	0.828	0.824	2.51	2.55	0.560	0.564	0.73	0.73
SSNV1	11/28/2016	Fine	15:04	0.2	M	0.1	2	7.4		3		10		12000		1.380		0.154		0.820		2.59		0.568		0.72	
SSNV1	11/30/2016	Fine	15:00	0.2	M	0.1	1	23.6	23.5	6	6.5	14	13.5	77000	73939	1.780	1.810	0.166	0.167	1.110	1.095	3.12	3.18	1.160	1.150	1.64	1.64
SSNV1	11/30/2016	Fine	15:00	0.2	M	0.1	2	23.4		7		13		71000		1.840		0.168		1.080		3.23		1.140		1.63	
SSNV1	12/2/2016	Cloudy	10:25	0.2	M	0.1	1	35.9	34.9	9	9.5	18	17	200000	184391	1.450	1.505	0.185	0.187	1.050	1.040	3.51	3.58	0.882	0.891	1.73	1.72
SSNV1	12/2/2016	Cloudy	10:25	0.2	M	0.1	2	33.8		10		16		170000		1.560		0.189		1.030		3.65		0.900		1.70	
SSNV2	11/22/2016	Cloudy	10:50	1	M	0.5	1	27.5	27.5	10	10	30	32	26000	22226	2.750	2.715	0.134	0.133	0.536	0.549	4.38	4.30	1.430	1.425	2.16	2.16
SSNV2	11/22/2016	Cloudy	10:50	1	M	0.5	2	27.4		10		34		19000		2.680		0.132		0.562		4.22		1.420		2.15	
SSNV2	11/24/2016	Fine	14:00	1	M	0.5	1	7.9	7.2	4	4	10	11	6400	6693	1.620	1.600	0.134	0.132	0.736	0.743	1.79	1.83	0.856	0.853	1.03	1.03
SSNV2	11/24/2016	Fine	14:00	1	M	0.5	2	6.4		4		12		7000		1.580		0.130		0.749		1.86		0.850		1.02	
SSNV2	11/26/2016	Cloudy	15:12	1	M	0.5	1	14.5	15.4	3	2.5	13	12	130000	108167	1.420	1.395	0.200	0.210	0.796	0.757	2.76	2.65	0.605	0.610	0.78	0.77
SSNV2	11/26/2016	Cloudy	15:12	1	M	0.5	2	16.3		2		11		90000		1.370		0.219		0.718		2.54		0.614		0.76	
SSNV2	11/28/2016	Fine	14:45	0.7	M	0.35	1	7.8	8.6	3	3	9	9	8800	9191	1.350	1.345	0.178	0.177	1.120	1.120	3.11	2.98	0.596	0.600	0.78	0.78
SSNV2	11/28/2016	Fine	14:45	0.7	M	0.35	2	9.3		3		9		9600		1.340		0.175		1.120		2.85		0.603		0.77	
SSNV2	11/30/2016	Fine	14:45	0.9	M	0.45	1	7.7	7.2	4	4	14	14	190000	204450	1.950	1.900	0.132	0.134	0.700	0.704	2.76	2.73	1.140	1.110	1.40	1.41
SSNV2	11/30/2016	Fine	14:45	0.9	M	0.45	2	6.7		4		14		220000		1.850		0.135		0.708		2.70		1.080		1.42	
SSNV2	12/2/2016	Cloudy	10:00	1	M	0.5	1	7.9	8.6	3	3	9	10	1500	1643	1.440	1.475	0.147	0.150	0.748	0.742	2.36	2.29	0.731	0.732	0.96	0.97
SSNV2	12/2/2016	Cloudy	10:00	1	M	0.5	2	9.3		3		11		1800		1.510		0.152		0.735		2.21		0.733		0.98	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis															
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
SSNV1	11/22/2016	Cloudy	11;15	0.2	M	0.1	1	<1	<1	2	2	48	48.5	2	2	<1	<1	2	2	<10	<10	385	387	<1	<1
SSNV1	11/22/2016	Cloudy	11:15	0.2	M	0.1	2	<1		2		49		2		<1		2		<10		389		<1	
SSNV1	11/24/2016	Fine	14:30	0.2	M	0.1	1	<1	<1	2	2	34	35.5	2	3	<1	<1	1	1	<10	<10	323	298.5	<1	<1
SSNV1	11/24/2016	Fine	14:30	0.2	M	0.1	2	<1		2		37		4		<1		1		<10		274		<1	
SSNV1	11/26/2016	Cloudy	15:30	0.2	M	0.1	1	<1	<1	<1	<1	7	7	2	3	<1	<1	<1	<1	<10	<10	62	63	<1	<1
SSNV1	11/26/2016	Cloudy	15:30	0.2	M	0.1	2	<1		<1		7		4		<1		<1		<10		64		<1	
SSNV1	11/28/2016	Fine	15:04	0.2	M	0.1	1	<1	<1	<1	<1	6	6	3	3	<1	<1	<1	<1	<10	<10	54	52.5	<1	<1
SSNV1	11/28/2016	Fine	15:04	0.2	M	0.1	2	<1		<1		6		3		<1		<1		<10		51		<1	
SSNV1	11/30/2016	Fine	15:00	0.2	M	0.1	1	<1	<1	<1	<1	13	14.5	1	1	<1	<1	1	1	<10	<10	102	110	<1	<1
SSNV1	11/30/2016	Fine	15:00	0.2	M	0.1	2	<1		<1		16		1		<1		1		<10		118		<1	
SSNV1	12/2/2016	Cloudy	10:25	0.2	M	0.1	1	<1	<1	<1	<1	16	18	2	2	<1	<1	<1	1	<10	<10	147	162	<1	<1
SSNV1	12/2/2016	Cloudy	10:25	0.2	M	0.1	2	<1		<1		20		2		<1		1		<10		177		<1	
SSNV2	11/22/2016	Cloudy	10:50	1	M	0.5	1	<1	<1	1	1	29	29.5	5	5	<1	<1	2	2	<10	<10	195	210	<1	<1
SSNV2	11/22/2016	Cloudy	10:50	1	M	0.5	2	<1		1		30		5		<1		2		<10		225		<1	
SSNV2	11/24/2016	Fine	14:00	1	M	0.5	1	<1	<1	<1	1	10	9	2	2	<1	<1	1	1	<10	<10	199	236.5	<1	<1
SSNV2	11/24/2016	Fine	14:00	1	M	0.5	2	<1		1		8		2		<1		1		<10		274		<1	
SSNV2	11/26/2016	Cloudy	15:12	1	M	0.5	1	<1	<1	<1	<1	10	12	2	3.5	<1	<1	<1	<1	<10	<10	50	54.5	<1	<1
SSNV2	11/26/2016	Cloudy	15:12	1	M	0.5	2	<1		<1		14		5		<1		<1		<10		59		<1	
SSNV2	11/28/2016	Fine	14:45	0.7	M	0.35	1	<1	<1	<1	<1	5	5	2	3	<1	<1	<1	<1	<10	<10	129	90.5	<1	<1
SSNV2	11/28/2016	Fine	14:45	0.7	M	0.35	2	<1		<1		5		4		<1		<1		<10		52		<1	
SSNV2	11/30/2016	Fine	14:45	0.9	M	0.45	1	<1	<1	<1	<1	9	9.5	2	2	<1	<1	1	1.5	<10	<10	74	77.5	<1	<1
SSNV2	11/30/2016	Fine	14:45	0.9	M	0.45	2	<1		<1		10		2		<1		2		<10		81		<1	
SSNV2	12/2/2016	Cloudy	10:00	1	M	0.5	1	<1	<1	<1	<1	7	6.5	1	1	<1	<1	<1	<1	<10	<10	53	49.5	<1	<1
SSNV2	12/2/2016	Cloudy	10:00	1	M	0.5	2	<1		<1		6		1		<1		<1		<10		46		<1	

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Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis																	
								Total Suspended Solids (mg/L)		BOD_5 (mg/L)		COD (mg/L)		E.coli (cfu/100mL)		Ammonia (mg/L-N)		Nitrite (mg/L-N)		Nitrate (mg/L-N)		Total Kjeldahl Nitrogen (mg/L)		Ortho-phosphate Phosphorus (mg/L)		Total Phosphorus (mg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
TW1	11/22/2016	Cloudy	12:05	0.1	M	0.05	1	13.7	14.5	2	2	6	7.5	1200	1249	0.088	0.095	0.006	0.004	0.060	0.064	0.20	0.21	0.015	0.016	0.05	0.06
TW1	11/22/2016	Cloudy	12:05	0.1	M	0.05	2	15.3		2		9		1300		0.101		<0.002		0.067		0.22		0.017		0.06	
TW1	11/24/2016	Fine	10:06	0.1	M	0.05	1	3.8	3.1	<1	<1	5	5	3100	2728	0.035	0.040	0.002	0.004	0.078	0.075	0.17	0.17	0.006	0.007	0.03	0.03
TW1	11/24/2016	Fine	10:06	0.1	M	0.05	2	2.3		<1		5		2400		0.045		0.006		0.072		0.16		0.007		0.03	
TW1	11/26/2016	Rainy	10:24	0.1	M	0.05	1	5.4	5.1	<1	<1	4	3.5	1400	1587	0.037	0.034	0.002	0.003	0.065	0.065	0.18	0.18	0.006	0.007	0.03	0.03
TW1	11/26/2016	Rainy	10:24	0.1	M	0.05	2	4.8		<1		3		1800		0.031		0.004		0.064		0.17		0.007		0.03	
TW1	11/28/2016	Fine	10:58	0.1	M	0.05	1	1.4	1.5	<1	1.5	4	4	1600	1918	0.041	0.046	<0.002	0.003	0.058	0.067	0.18	0.26	0.010	0.010	0.03	0.03
TW1	11/28/2016	Fine	10:58	0.1	M	0.05	2	1.6		2		4		2300		0.050		0.003		0.075		0.34		0.010		0.03	
TW1	11/30/2016	Fine	10:20	0.1	M	0.05	1	6.7	7.7	<1	<1	3	5.5	820	883	0.050	0.047	<0.002	<0.002	0.051	0.051	0.15	0.14	0.010	0.009	0.02	0.02
TW1	11/30/2016	Fine	10:20	0.1	M	0.05	2	8.7		<1		8		950		0.043		<0.002		0.051		0.13		0.007		0.02	
TW1	12/2/2016	Cloudy	15:30	0.3	M	0.15	1	2.8	3.5	<1	<1	4	4.5	1100	1196	0.032	0.039	0.004	0.003	0.042	0.046	0.11	0.11	0.010	0.010	0.03	0.03
TW1	12/2/2016	Cloudy	15:30	0.3	M	0.15	2	4.1		<1		5		1300		0.045		0.002		0.050		0.10		0.010		0.03	
TW2A	11/22/2016	Cloudy	12:22	0.3	M	0.15	1	7.7	8.5	<1	<1	6	6	1500	1688	0.052	0.054	0.002	0.002	0.054	0.055	0.15	0.15	0.015	0.015	0.04	0.04
TW2A	11/22/2016	Cloudy	12:22	0.3	M	0.15	2	9.2		<1		6		1900		0.056		<0.002		0.055		0.14		0.015		0.04	
TW2A	11/24/2016	Fine	10:30	0.3	M	0.15	1	8.0	7.6	<1	<1	4	4	1900	2090	0.044	0.043	0.007	0.006	0.052	0.052	0.17	0.17	0.008	0.009	0.04	0.04
TW2A	11/24/2016	Fine	10:30	0.3	M	0.15	2	7.1		<1		4		2300		0.042		0.004		0.052		0.17		0.009		0.03	
TW2A	11/26/2016	Rainy	10:43	0.3	M	0.15	1	7.7	8.5	<1	<1	6	8	1300	1249	0.050	0.046	0.003	0.003	0.058	0.059	0.18	0.17	0.010	0.009	0.04	0.04
TW2A	11/26/2016	Rainy	10:43	0.3	M	0.15	2	9.3		<1		10		1200		0.042		0.002		0.059		0.16		0.007		0.03	
TW2A	11/28/2016	Fine	11:11	0.4	M	0.2	1	4.5	4.2	<1	<1	2	2	1100	1149	0.037	0.040	0.002	0.002	0.036	0.038	0.26	0.23	0.009	0.009	0.05	0.05
TW2A	11/28/2016	Fine	11:11	0.4	M	0.2	2	3.9		<1		<2		1200		0.042		<0.002		0.039		0.20		0.009		0.05	
TW2A	11/30/2016	Fine	10:05	0.4	M	0.2	1	29.7	30.2	<1	<1	3	5.5	1300	1572	0.044	0.043	<0.002	<0.002	0.080	0.080	0.24	0.23	0.009	0.009	0.06	0.06
TW2A	11/30/2016	Fine	10:05	0.4	M	0.2	2	30.6		<1		8		1900		0.041		<0.002		0.080		0.22		0.009		0.05	
TW2A	12/2/2016	Cloudy	15:05	0.4	M	0.2	1	4.4	4.9	<1	<1	3	3	2600	2793	0.048	0.049	<0.002	<0.002	0.033	0.033	0.09	0.09	0.010	0.010	0.02	0.02
TW2A	12/2/2016	Cloudy	15:05	0.4	M	0.2	2	5.4		<1		3		3000		0.050		<0.002		0.033		0.09		0.010		0.02	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

Baseline Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	Laboratory Analysis															
								Cadmium (µg/L)		Chromium (µg/L)		Copper (µg/L)		Lead (µg/L)		Mercury (µg/L)		Nickel (µg/L)		Arsenic (µg/L)		Zinc (µg/L)		Silver (µg/L)	
								Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
TW1	11/22/2016	Cloudy	12:05	0.1	M	0.05	1	<1	<1	<1	<1	1	<1	3	3.5	<1	<1	<1	<1	<10	<10	66	102	<1	<1
TW1	11/22/2016	Cloudy	12:05	0.1	M	0.05	2	<1		<1		1		4		<1		<1		<10		138		<1	
TW1	11/24/2016	Fine	10:06	0.1	M	0.05	1	<1	<1	<1	<1	2	2	<1	<1	<1	<1	<1	<1	<10	<10	49	39.5	<1	<1
TW1	11/24/2016	Fine	10:06	0.1	M	0.05	2	<1		<1		2		<1		<1		<1		<10		30		<1	
TW1	11/26/2016	Rainy	10:24	0.1	M	0.05	1	<1	<1	<1	<1	1	1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<1	<1
TW1	11/26/2016	Rainy	10:24	0.1	M	0.05	2	<1		<1		1		<1		<1		<1		<10		<10		<1	
TW1	11/28/2016	Fine	10:58	0.1	M	0.05	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	15	<1	<1
TW1	11/28/2016	Fine	10:58	0.1	M	0.05	2	<1		<1		<1		<1		<1		<1		<10		20		<1	
TW1	11/30/2016	Fine	10:20	0.1	M	0.05	1	<1	<1	<1	<1	3	2.5	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<1	<1
TW1	11/30/2016	Fine	10:20	0.1	M	0.05	2	<1		<1		2		<1		<1		<1		<10		<10		<1	
TW1	12/2/2016	Cloudy	15:30	0.3	M	0.15	1	<1	<1	<1	<1	6	4.5	3	3	<1	<1	4	2.5	<10	<10	14	14.5	<1	<1
TW1	12/2/2016	Cloudy	15:30	0.3	M	0.15	2	<1		<1		3		3		<1		<1		<10		15		<1	
TW2A	11/22/2016	Cloudy	12:22	0.3	M	0.15	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	14	14	<1	<1
TW2A	11/22/2016	Cloudy	12:22	0.3	M	0.15	2	<1		<1		<1		<1		<1		<1		<10		14		<1	
TW2A	11/24/2016	Fine	10:30	0.3	M	0.15	1	<1	<1	<1	<1	3	3	<1	<1	<1	<1	<1	<1	<10	<10	24	25.5	<1	<1
TW2A	11/24/2016	Fine	10:30	0.3	M	0.15	2	<1		<1		3		<1		<1		<1		<10		27		<1	
TW2A	11/26/2016	Rainy	10:43	0.3	M	0.15	1	<1	<1	<1	<1	1	1.5	2	2	<1	<1	<1	<1	<10	<10	13	60	<1	<1
TW2A	11/26/2016	Rainy	10:43	0.3	M	0.15	2	<1		<1		2		2		<1		<1		<10		25		<1	
TW2A	11/28/2016	Fine	11:11	0.4	M	0.2	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<10	<10	<10	<10	<1	<1
TW2A	11/28/2016	Fine	11:11	0.4	M	0.2	2	<1		<1		<1		<1		<1		1		<10		<10		<1	
TW2A	11/30/2016	Fine	10:05	0.4	M	0.2	1	<1	<1	<1	<1	3	2	4	4	<1	<1	<1	<1	<10	<10	16	17	<1	<1
TW2A	11/30/2016	Fine	10:05	0.4	M	0.2	2	<1		<1		4		4		<1		<1		<10		18		<1	
TW2A	12/2/2016	Cloudy	15:05	0.4	M	0.2	1	<1	<1	<1	<1	4	3	2	1.5	<1	<1	<1	<1	<10	<10	20	17	<1	<1
TW2A	12/2/2016	Cloudy	15:05	0.4	M	0.2	2	<1		<1		2		1		<1		<1		<10		14		<1	

Note: 1. Ave.: (Except E.coli) "Averaged" is calculated by taking the arithmetic means for the reading

2. ND: Not Detected

3. NA: Not Applicatable

3. Averaged of E.coli is calculated by taking geometric mean of the readings, all ND sample results (<1) for E.coli is regarded as 1 in calculating the geometric mean.

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MaterialLab

Appendix F

Graphical Presentation of Baseline Water Quality Monitoring Data

FUGRO TECHNICAL SERVICES LIMITED
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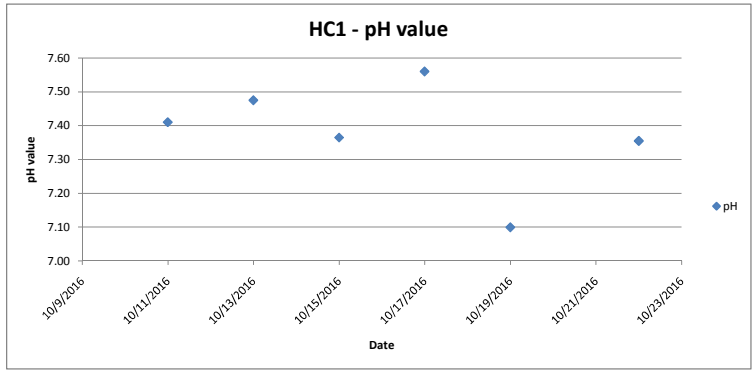
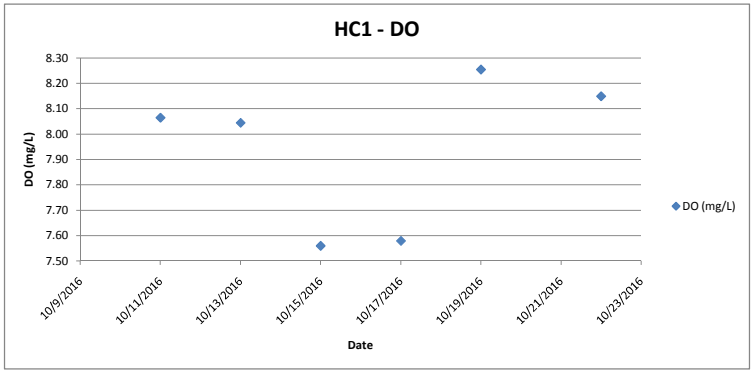
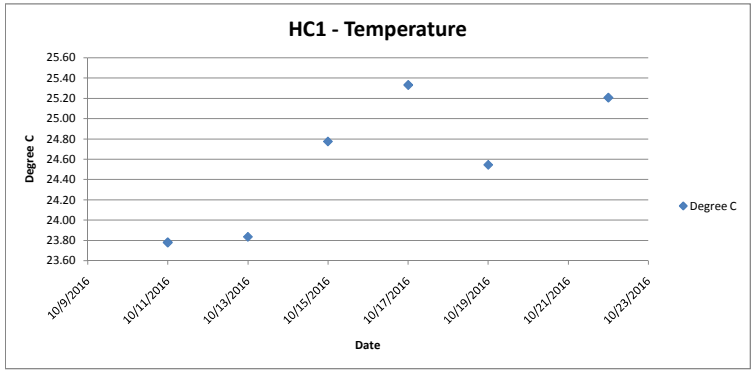
Fax : (852)-24508032
Email : mcl@fugro.com.hk

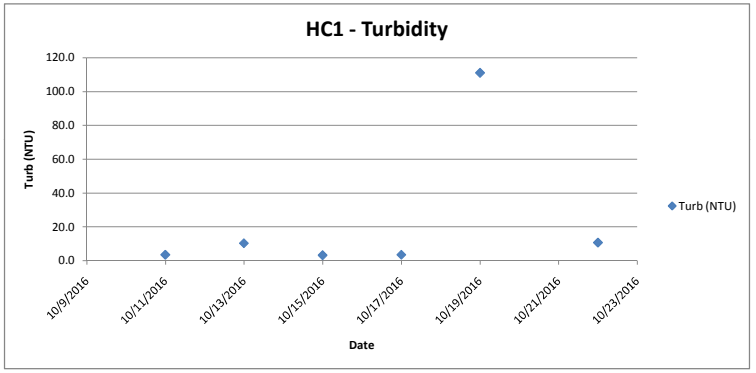
MaterialLab

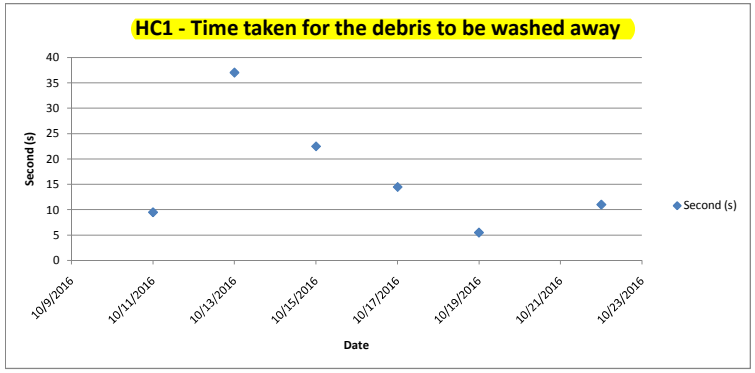
Wet Season

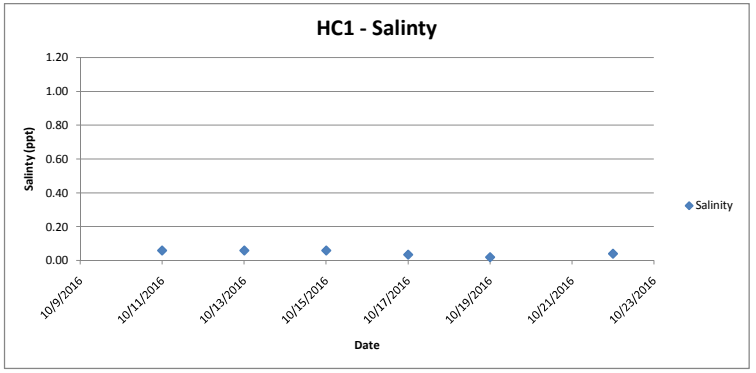

HC1 - pH value
7.60
7.50
7.40
7.30
7.20
7.10
7.00
pH value
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

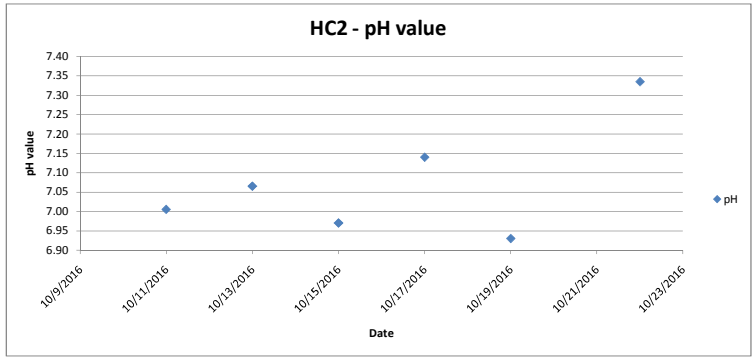

HC1 - DO
8.30
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
DO (mg/L)
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

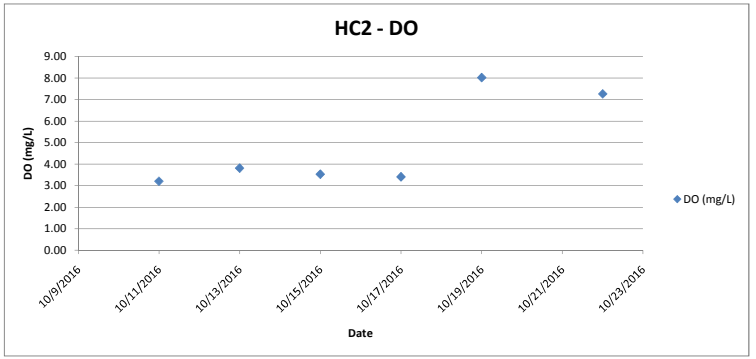

HC1 - Temperature
25.60
25.40
25.20
25.00
24.80
24.60
24.40
24.20
24.00
23.80
23.60
Degree C
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

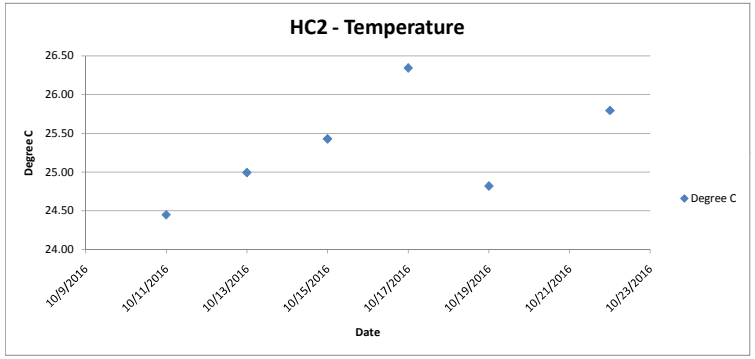

HC1 - Turbidity
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Turb (NTU)
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

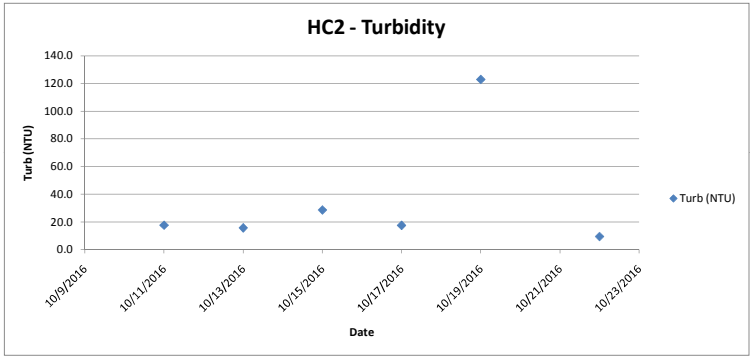

HC1 - Time taken for the debris to be washed away
40
35
30
25
20
15
10
5
0
Second (s)
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

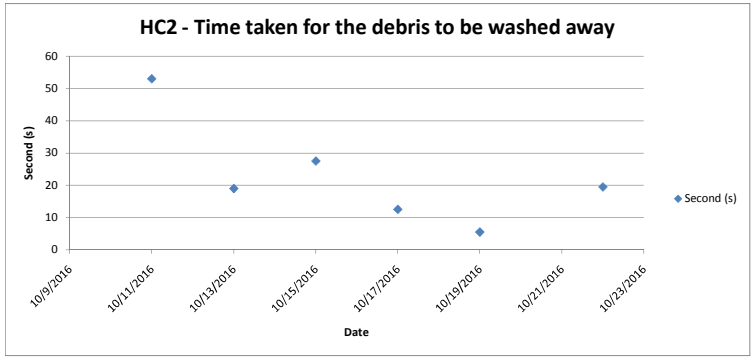

HC1 - Salinty
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Salinty (ppt)
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

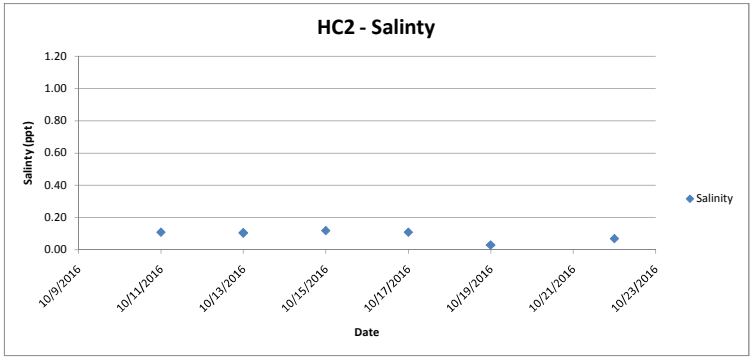

HC2 - pH value
pH value
7.40
7.35
7.30
7.25
7.20
7.15
7.10
7.05
7.00
6.95
6.90
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

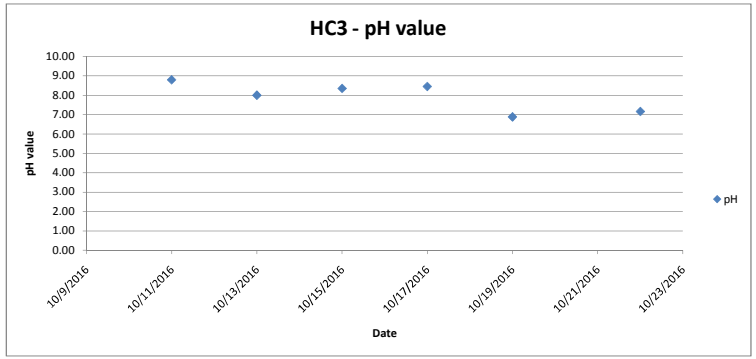

HC2 - DO
DO (mg/L)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

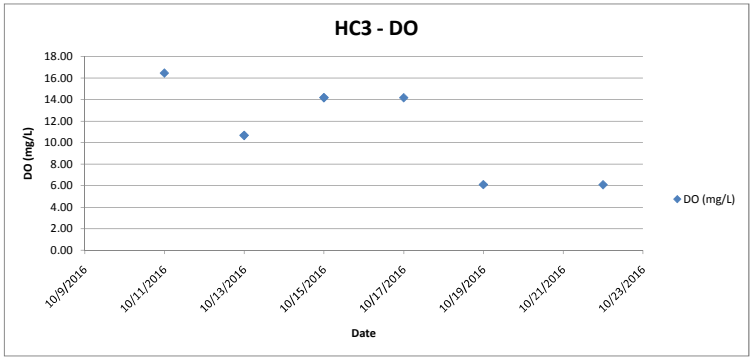

HC2 - Temperature
Degree C
26.50
26.00
25.50
25.00
24.50
24.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

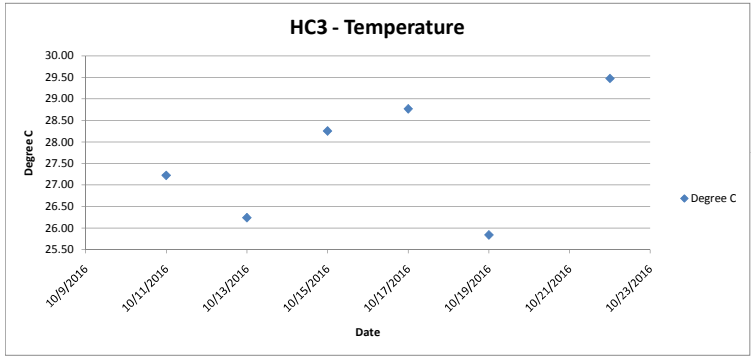

HC2 - Turbidity
Turb (NTU)
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

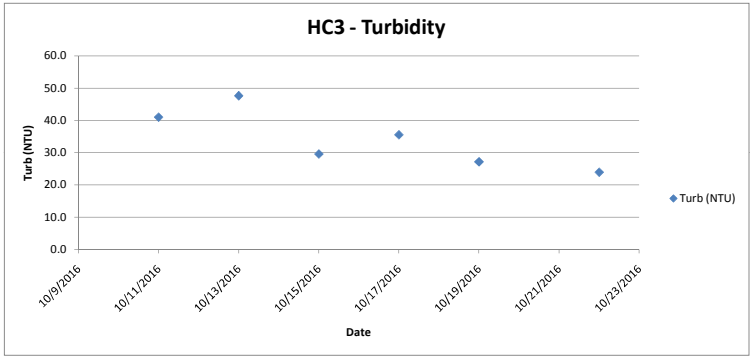

HC2 - Time taken for the debris to be washed away
Second (s)
60
50
40
30
20
10
0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

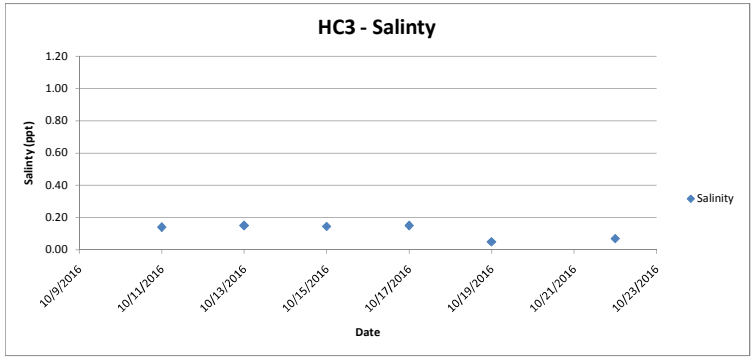

HC2 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

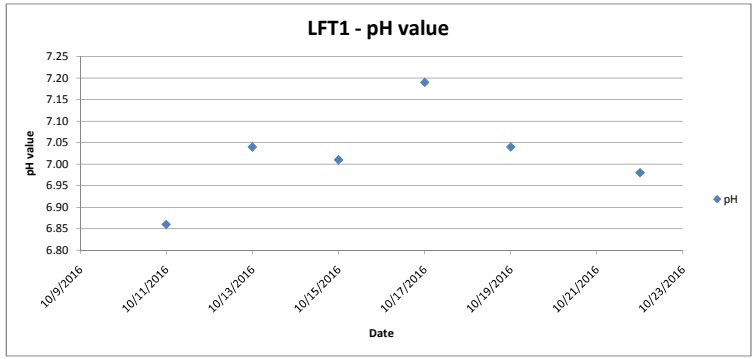

HC3 - pH value
pH value
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

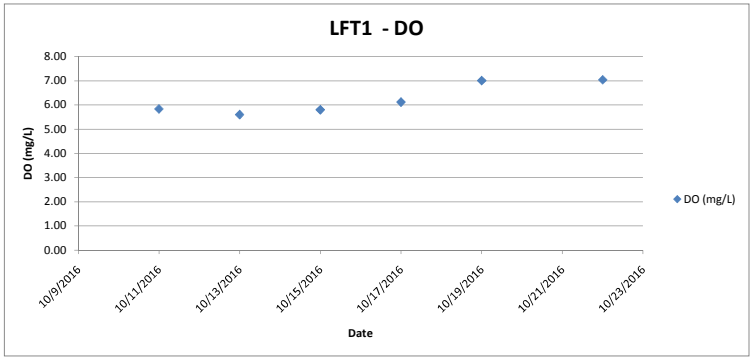

HC3 - DO
DO (mg/L)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

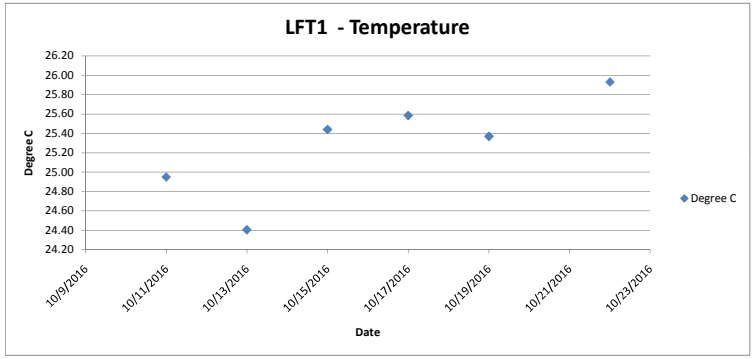

HC3 - Temperature
Degree C
30.00
29.50
29.00
28.50
28.00
27.50
27.00
26.50
26.00
25.50
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

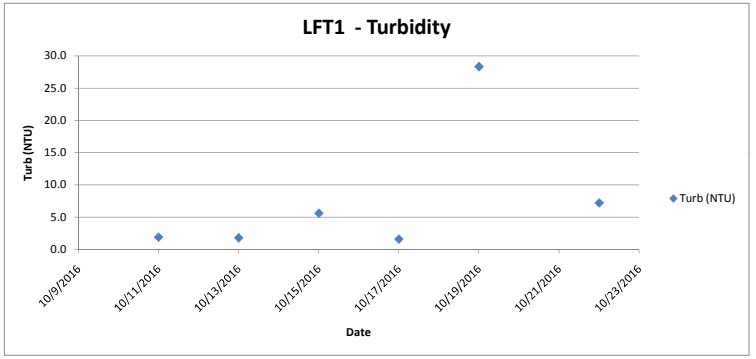

HC3 - Turbidity
Turb (NTU)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

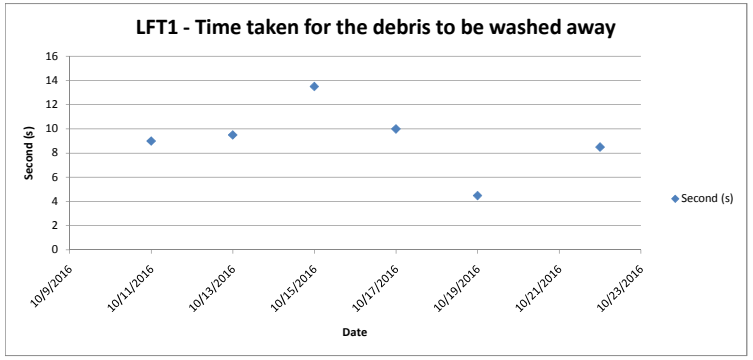

HC3 - Salinity
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

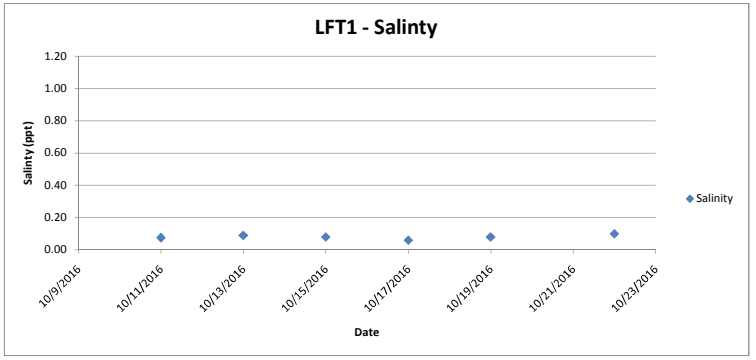

LFT1 - pH value
pH value
7.25
7.20
7.15
7.10
7.05
7.00
6.95
6.90
6.85
6.80
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

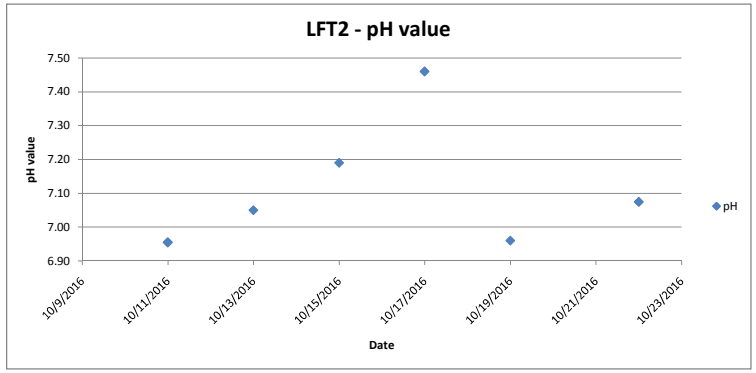

LFT1 - DO
DO (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

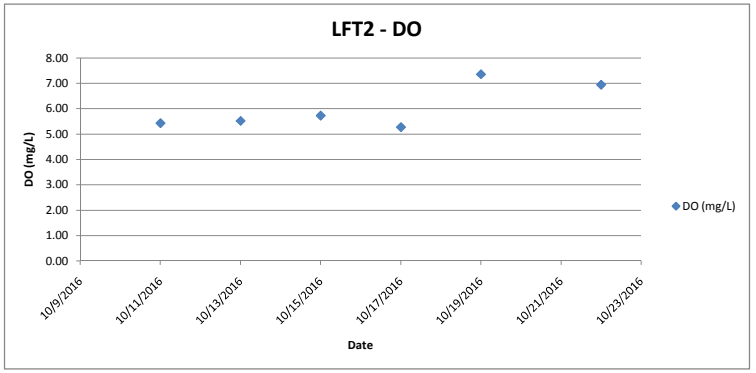

LFT1 - Temperature
Degree C
26.20
26.00
25.80
25.60
25.40
25.20
25.00
24.80
24.60
24.40
24.20
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

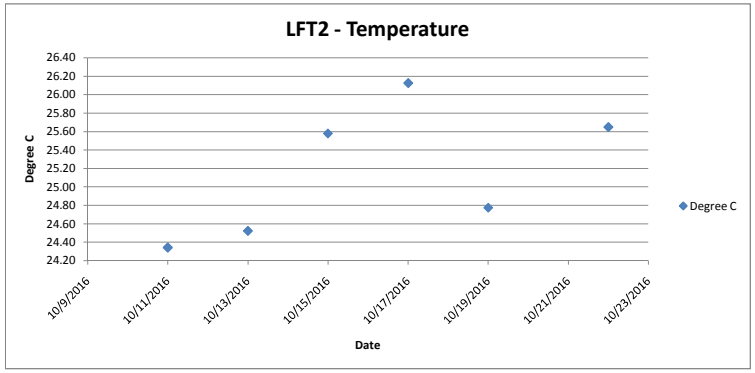

LFT1 - Turbidity
Turb (NTU)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

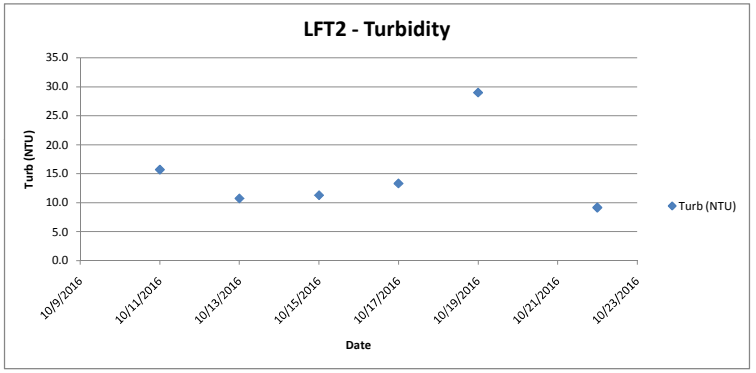

LFT1 - Time taken for the debris to be washed away
Second (s)
16
14
12
10
8
6
4
2
0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

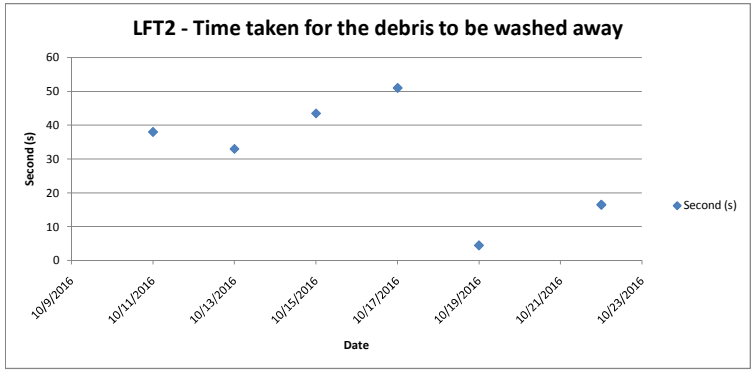

LFT1 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

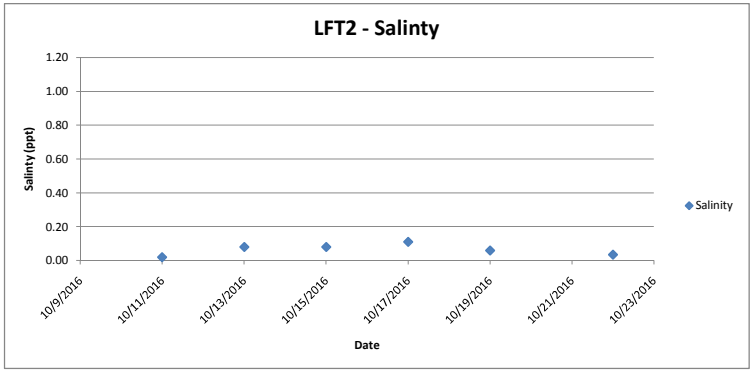

LFT2 - pH value
pH value
7.50
7.40
7.30
7.20
7.10
7.00
6.90
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

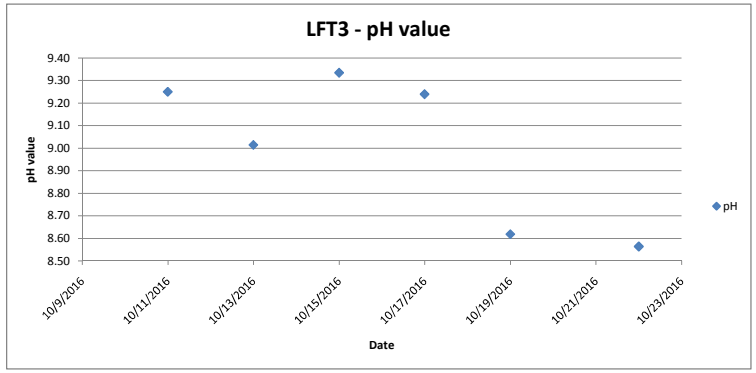

LFT2 - DO
DO (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

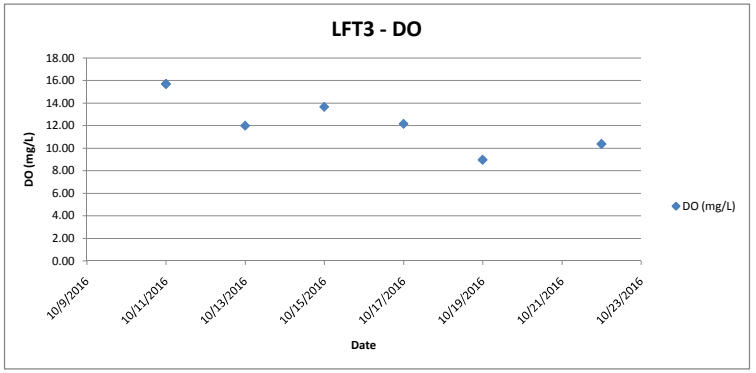

LFT2 - Temperature
Degree C
26.40
26.20
26.00
25.80
25.60
25.40
25.20
25.00
24.80
24.60
24.40
24.20
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

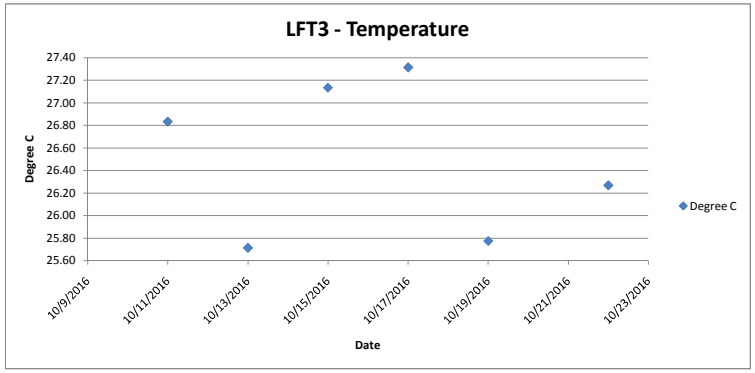

LFT2 - Turbidity
Turb (NTU)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

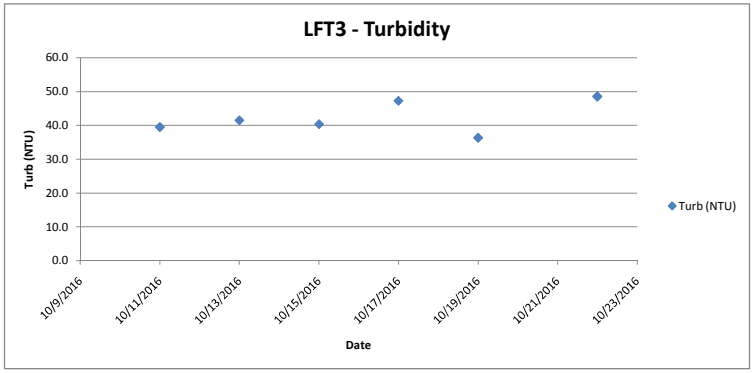

LFT2 - Time taken for the debris to be washed away
Second (s)
60
50
40
30
20
10
0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

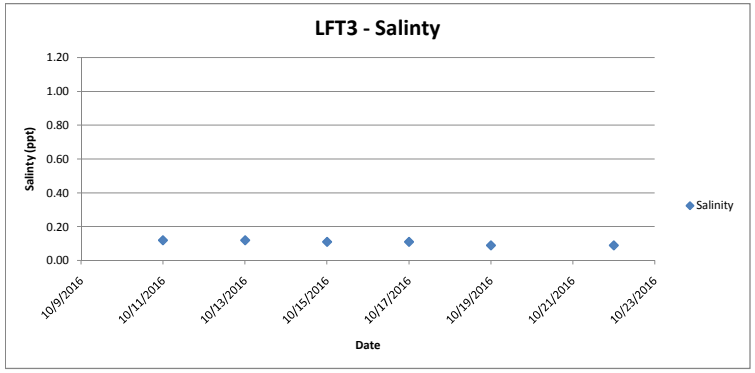

LFT2 - Salinty
Salinty (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

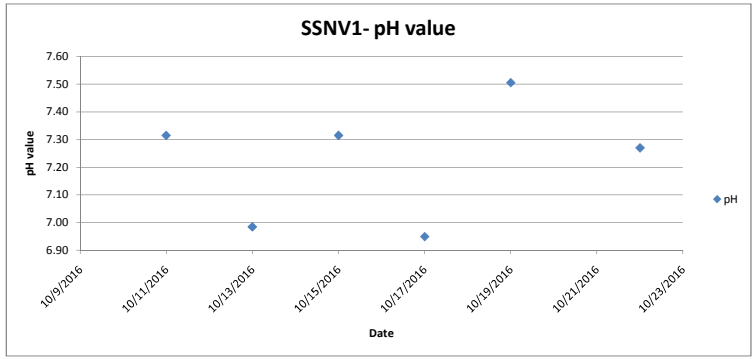

LFT3 - pH value
pH value
9.40
9.30
9.20
9.10
9.00
8.90
8.80
8.70
8.60
8.50
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

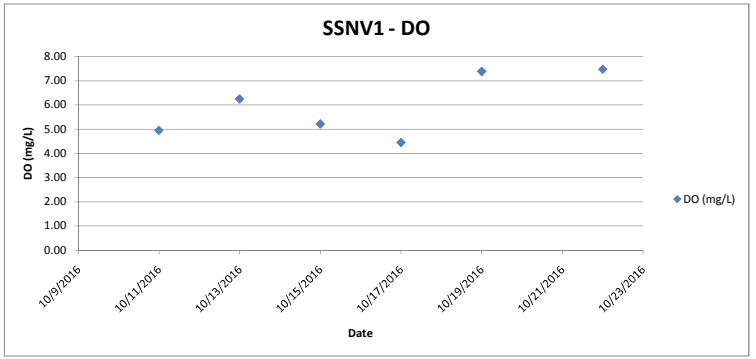

LFT3 - DO
DO (mg/L)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

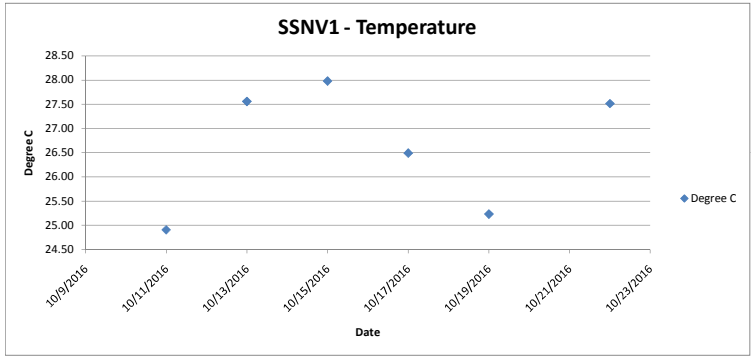

LFT3 - Temperature
Degree C
27.40
27.20
27.00
26.80
26.60
26.40
26.20
26.00
25.80
25.60
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

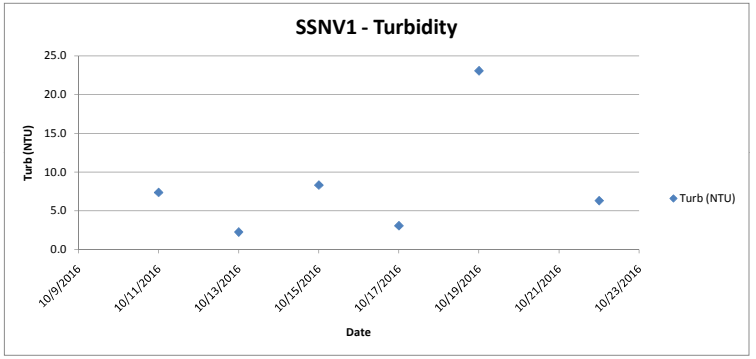

LFT3 - Turbidity
Turb (NTU)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

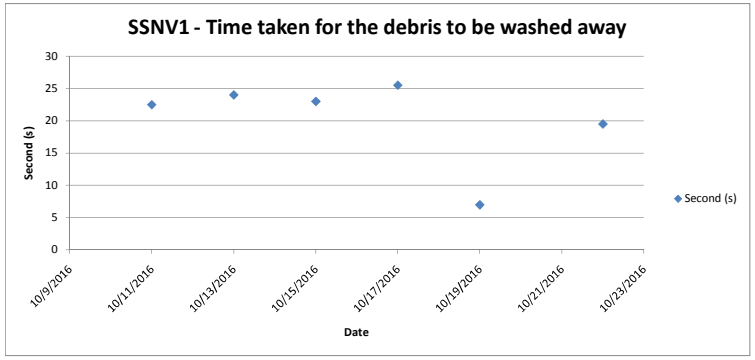

LFT3 - Salinty
Salinty (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

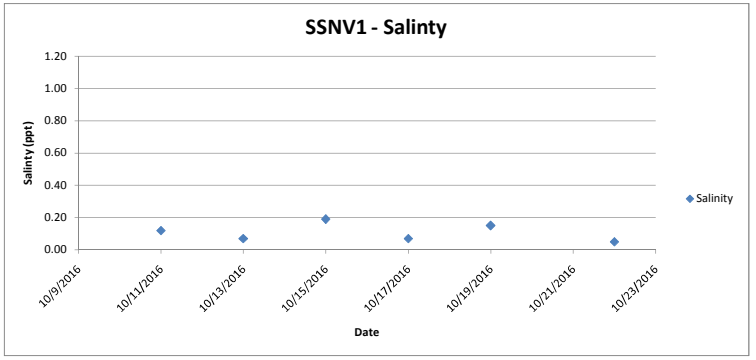

SSNV1- pH value
pH value
7.60
7.50
7.40
7.30
7.20
7.10
7.00
6.90
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

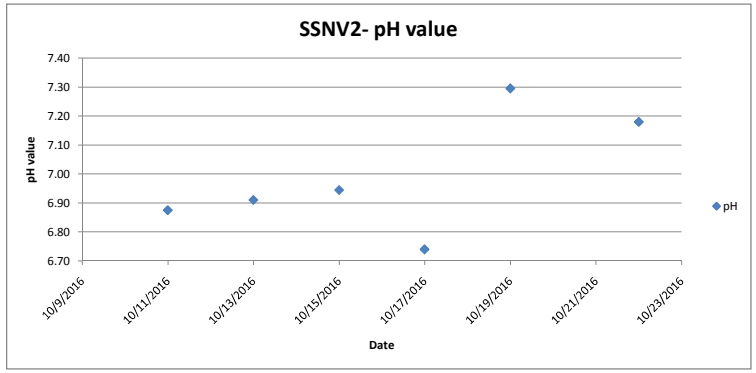

SSNV1 - DO
DO (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

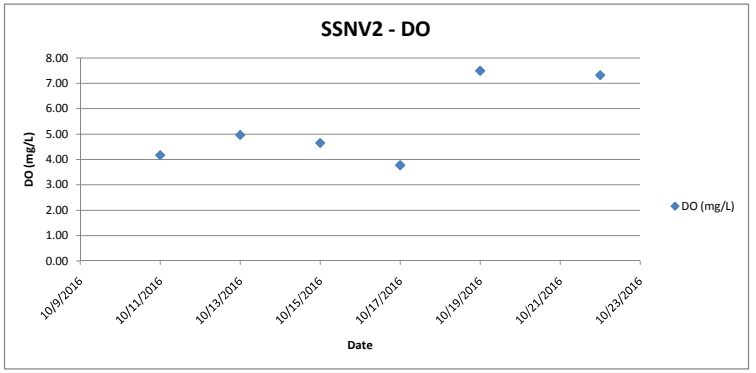

SSNV1 - Temperature
Degree C
28.50
28.00
27.50
27.00
26.50
26.00
25.50
25.00
24.50
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

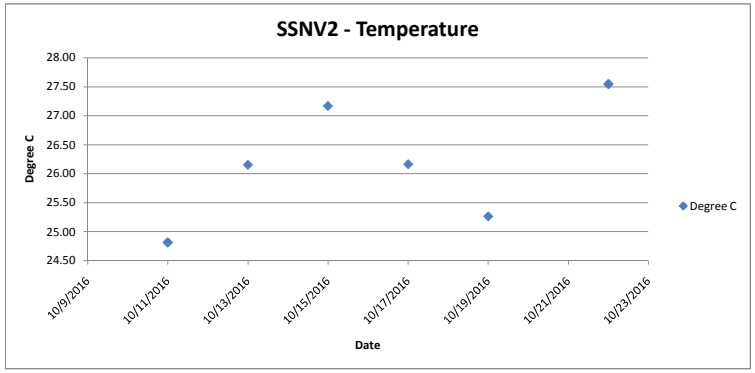

SSNV1 - Turbidity
Turb (NTU)
25.0
20.0
15.0
10.0
5.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

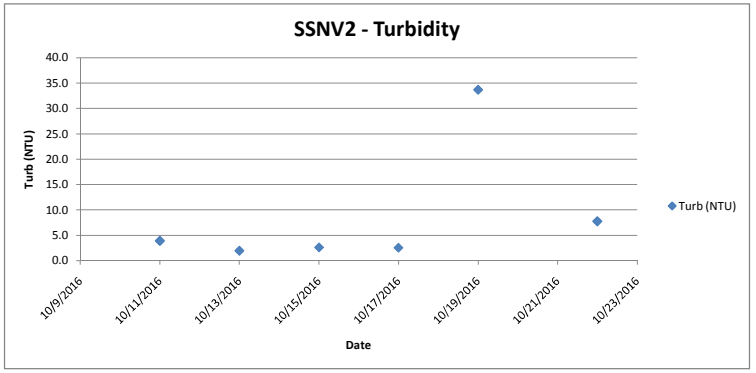

SSNV1 - Time taken for the debris to be washed away
Second (s)
30
25
20
15
10
5
0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

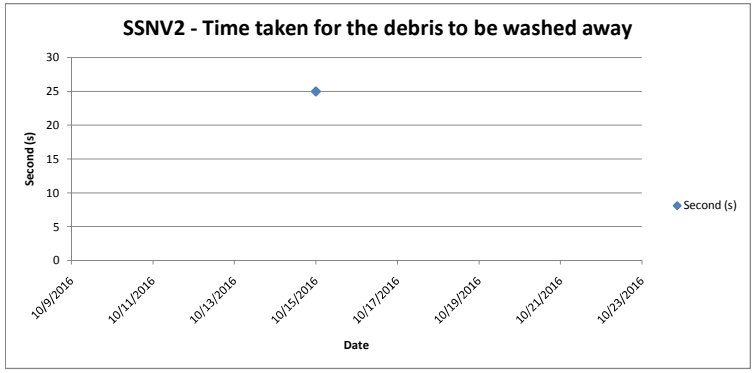

SSNV1 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

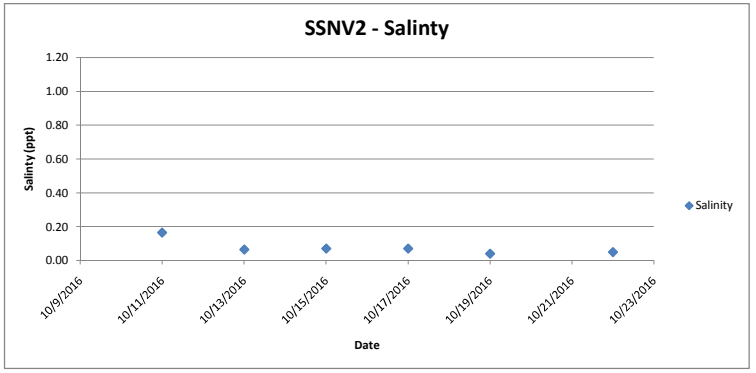

SSNV2- pH value
pH value
7.40
7.30
7.20
7.10
7.00
6.90
6.80
6.70
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

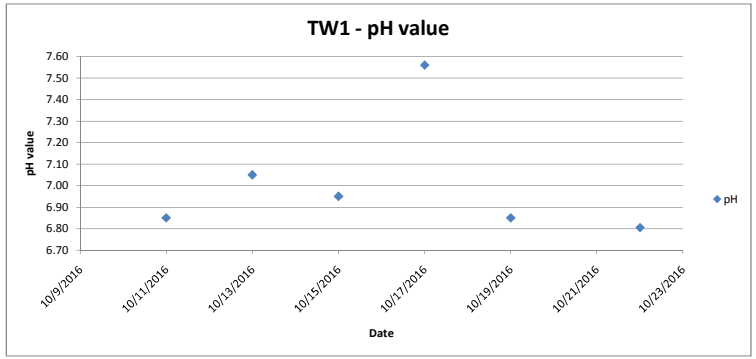

SSNV2 - DO
DO (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

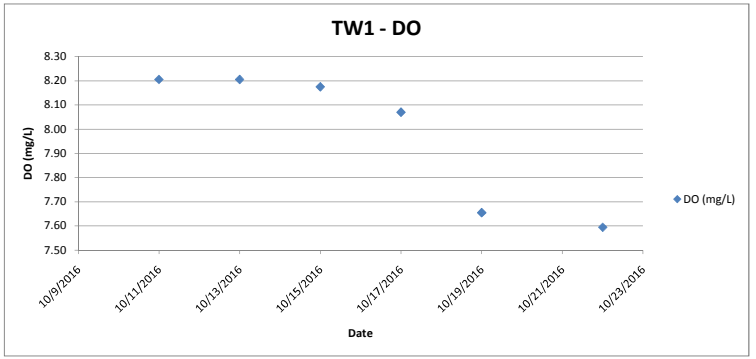

SSNV2 - Temperature
Degree C
28.00
27.50
27.00
26.50
26.00
25.50
25.00
24.50
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

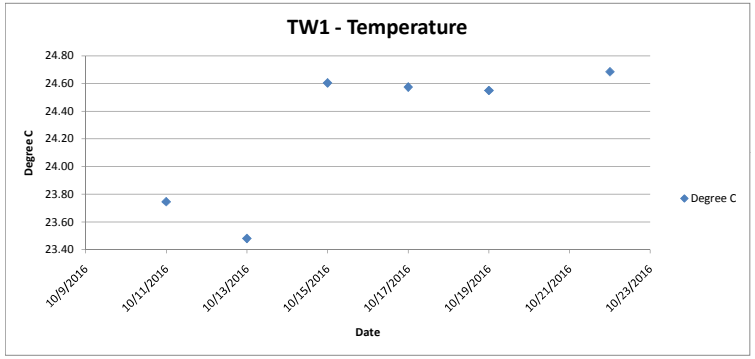

SSNV2 - Turbidity
Turb (NTU)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

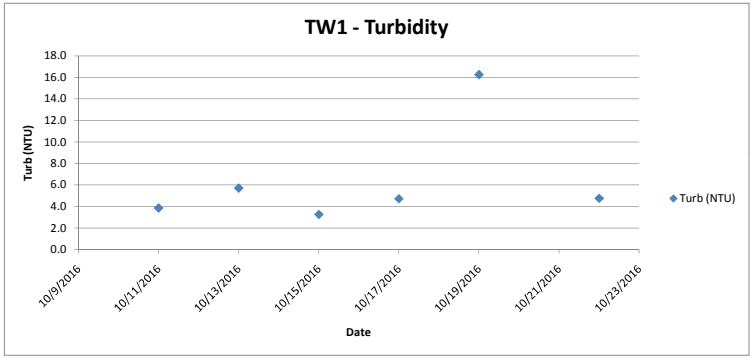

SSNV2 - Time taken for the debris to be washed away
Second (s)
30
25
20
15
10
5
0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

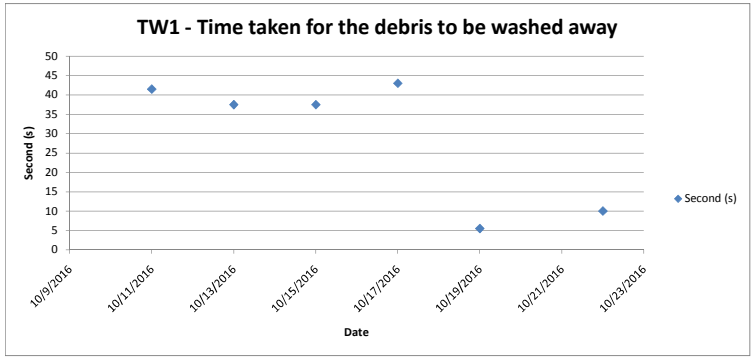

SSNV2 - Salinty
Salinty (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

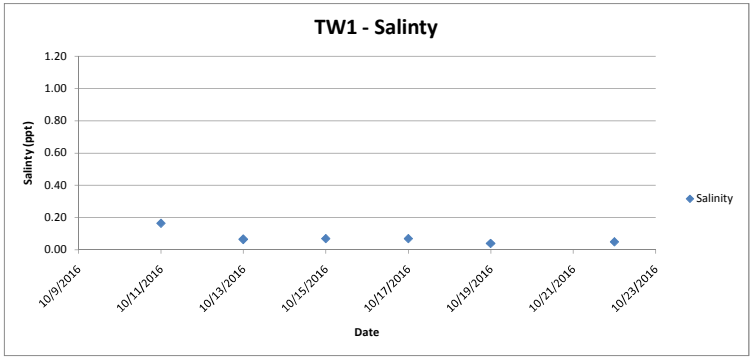

TW1 - pH value
pH value
7.60
7.50
7.40
7.30
7.20
7.10
7.00
6.90
6.80
6.70
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
pH

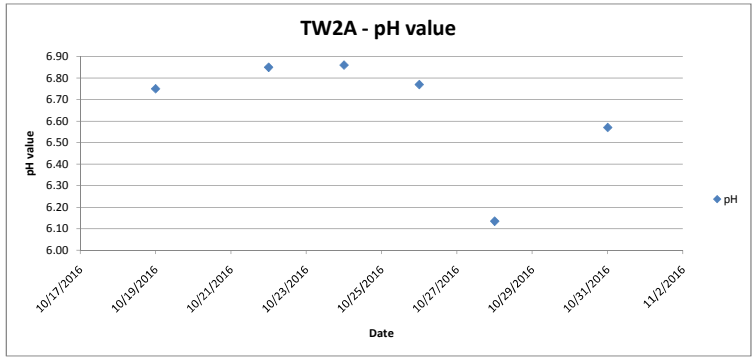

TW1 - DO
DO (mg/L)
8.30
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
DO (mg/L)

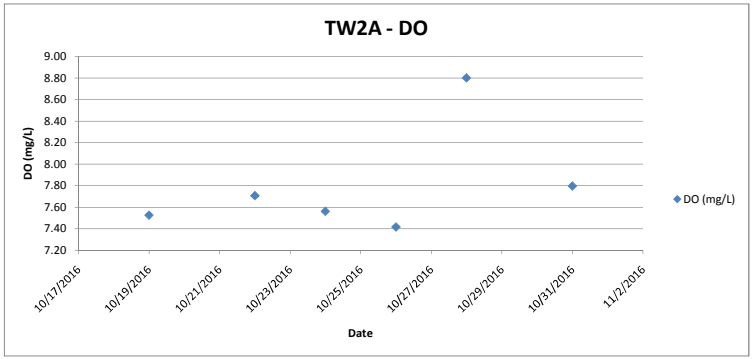

TW1 - Temperature
Degree C
24.80
24.60
24.40
24.20
24.00
23.80
23.60
23.40
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Degree C

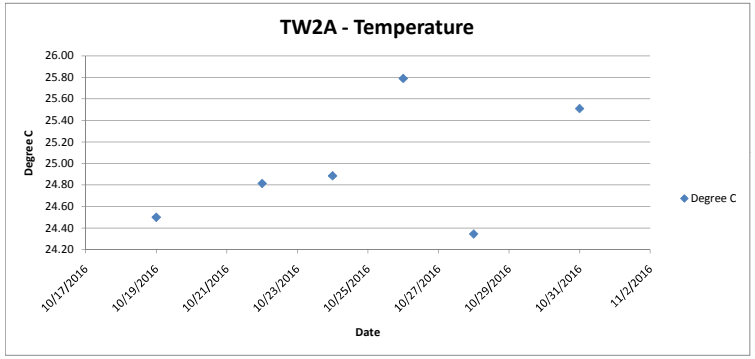

TW1 - Turbidity
Turb (NTU)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Turb (NTU)

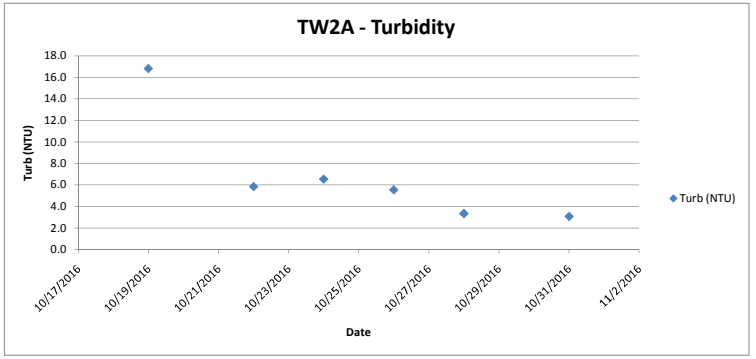

TW1 - Time taken for the debris to be washed away
Second (s)
50
45
40
35
30
25
20
15
10
5
0
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Second (s)

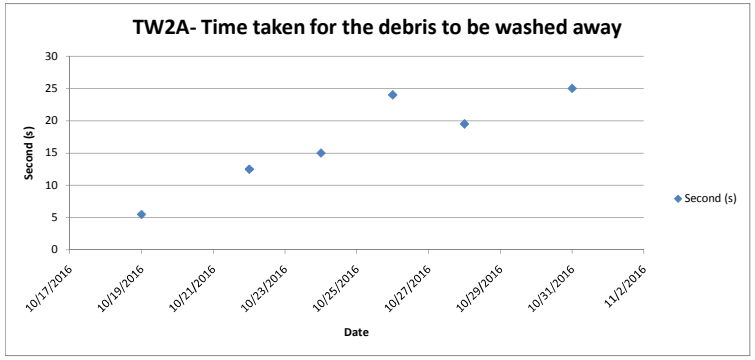

TW1 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/9/2016
10/11/2016
10/13/2016
10/15/2016
10/17/2016
10/19/2016
10/21/2016
10/23/2016
Date
Salinity

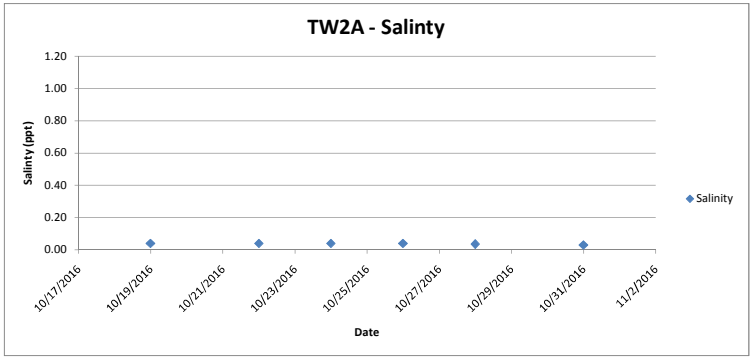

TW2A - pH value
pH value
6.90
6.80
6.70
6.60
6.50
6.40
6.30
6.20
6.10
6.00
10/17/2016
10/19/2016
10/21/2016
10/23/2016
10/25/2016
10/27/2016
10/29/2016
10/31/2016
11/2/2016
Date
pH

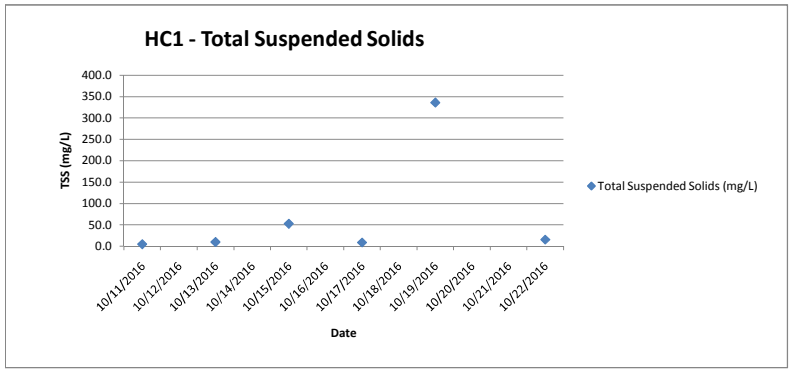

TW2A - DO
DO (mg/L)
9.00
8.80
8.60
8.40
8.20
8.00
7.80
7.60
7.40
7.20
10/17/2016
10/19/2016
10/21/2016
10/23/2016
10/25/2016
10/27/2016
10/29/2016
10/31/2016
11/2/2016
Date
DO (mg/L)

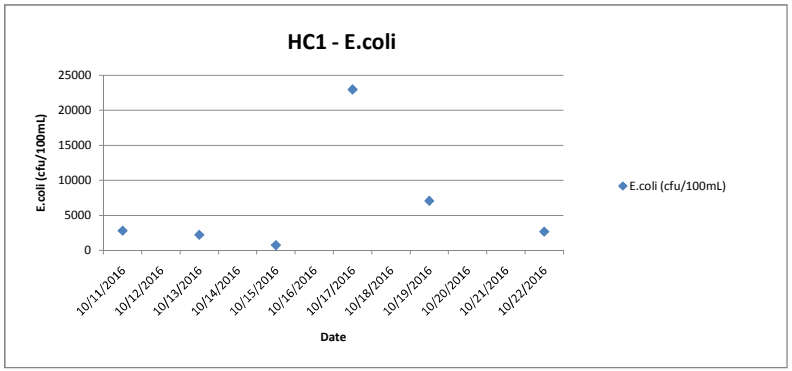

TW2A - Temperature
Degree C
26.00
25.80
25.60
25.40
25.20
25.00
24.80
24.60
24.40
24.20
10/17/2016
10/19/2016
10/21/2016
10/23/2016
10/25/2016
10/27/2016
10/29/2016
10/31/2016
11/2/2016
Date
Degree C

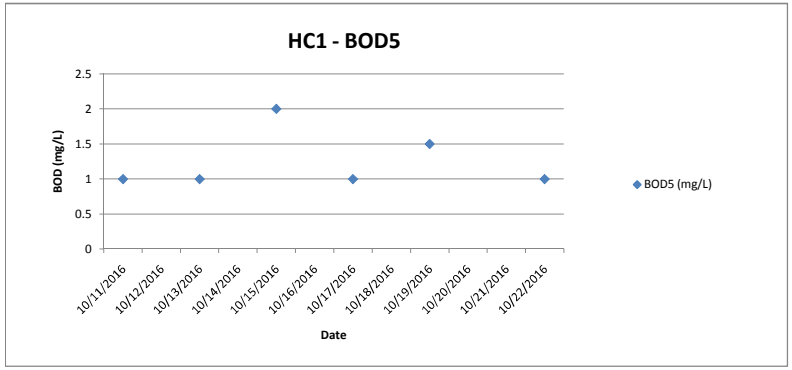

TW2A - Turbidity
Turb (NTU)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
10/17/2016
10/19/2016
10/21/2016
10/23/2016
10/25/2016
10/27/2016
10/29/2016
10/31/2016
11/2/2016
Date
Turb (NTU)

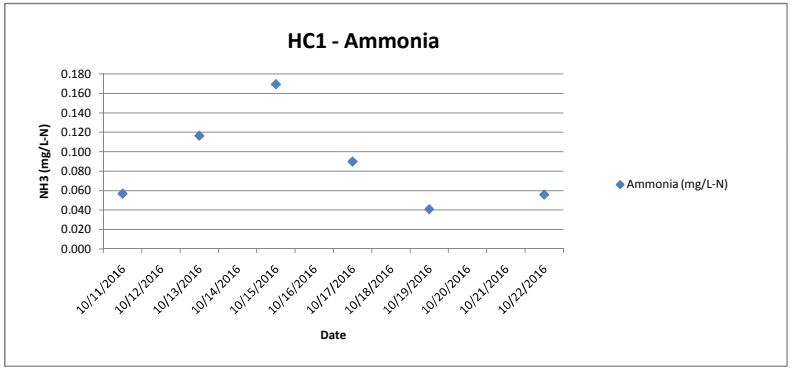

TW2A- Time taken for the debris to be washed away
Second (s)
30
25
20
15
10
5
0
10/17/2016
10/19/2016
10/21/2016
10/23/2016
10/25/2016
10/27/2016
10/29/2016
10/31/2016
11/2/2016
Date
Second (s)

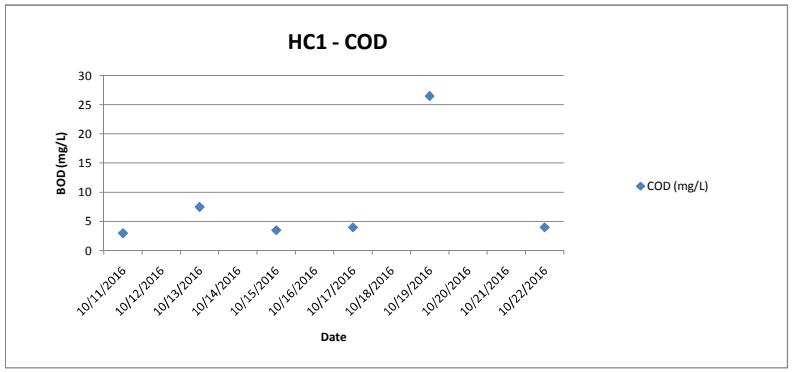

TW2A - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/17/2016
10/19/2016
10/21/2016
10/23/2016
10/25/2016
10/27/2016
10/29/2016
10/31/2016
11/2/2016
Date
Salinity

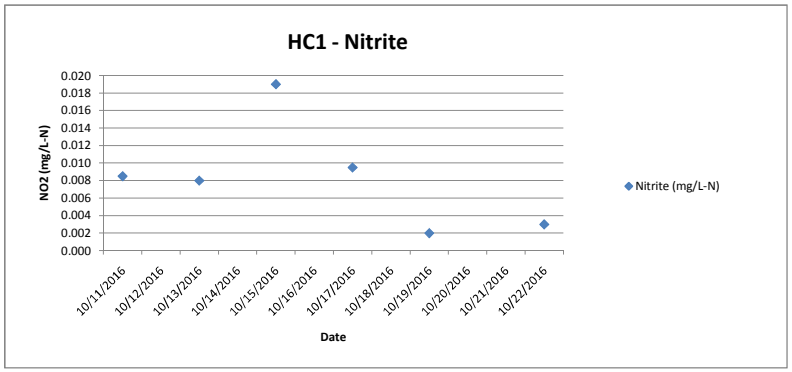

HC1 - Total Suspended Solids
TSS (mg/L)
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

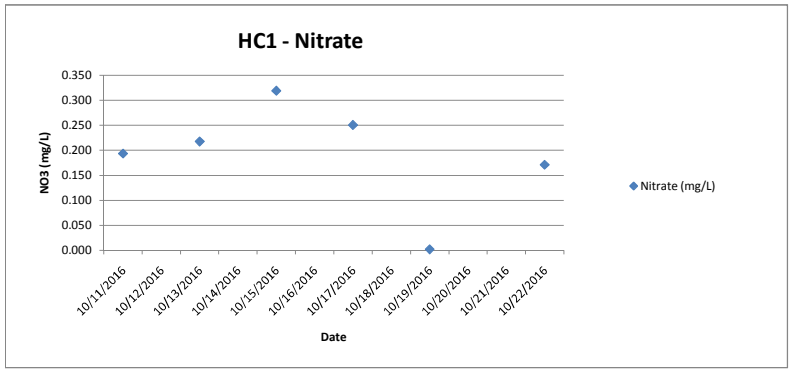

HC1 - E.coli
E.coli (cfu/100mL)
25000
20000
15000
10000
5000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

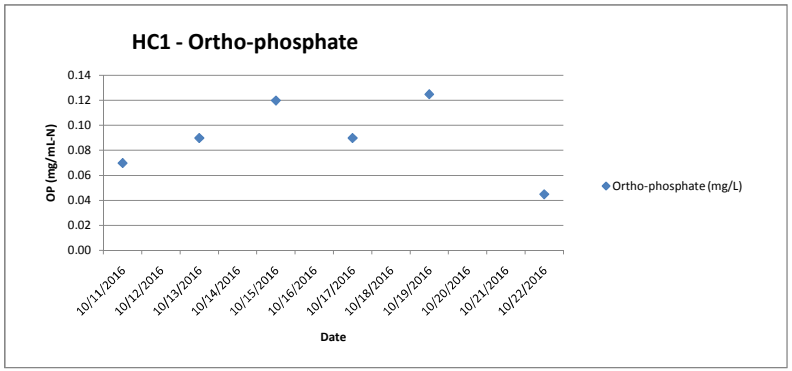

HC1 - BOD5
BOD (mg/L)
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

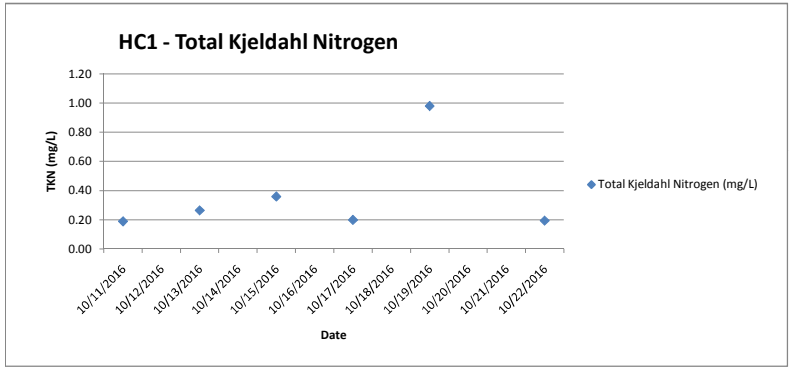

HC1 - Ammonia
NH3 (mg/L-N)
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

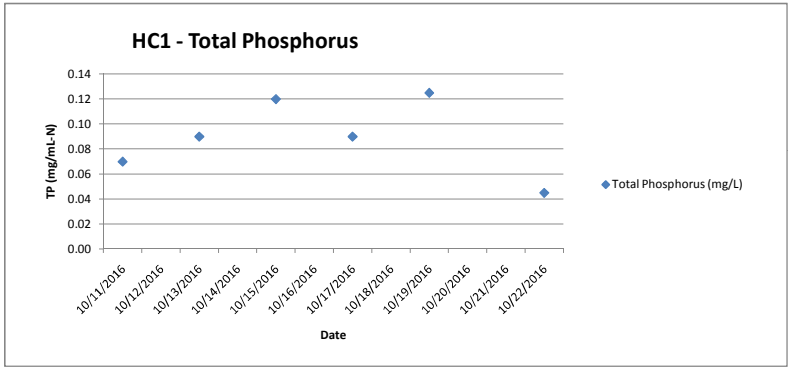

HC1 - COD
BOD (mg/L)
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

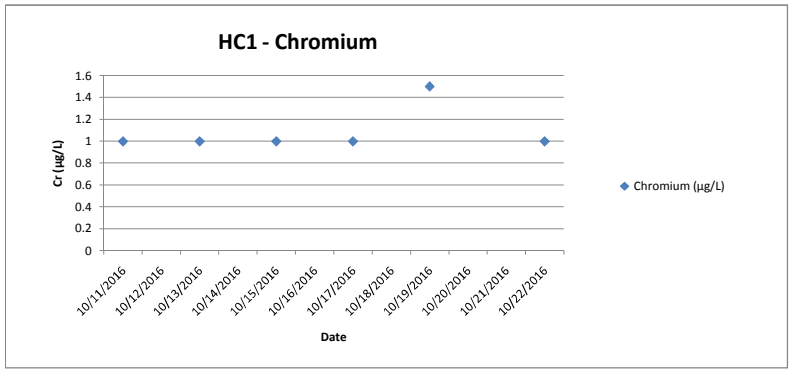

HC1 - Nitrite
NO2 (mg/L-N)
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

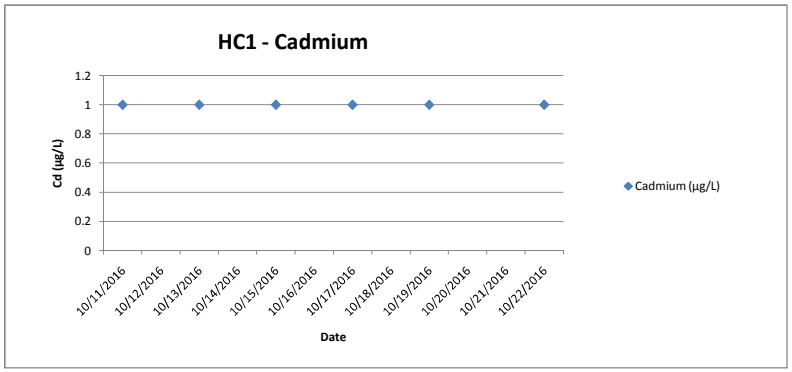

HC1 - Nitrate
NO3 (mg/L)
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

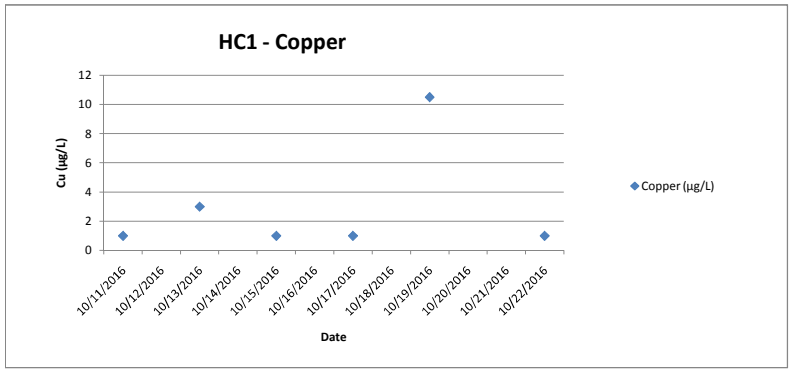

HC1 - Ortho-phosphate
OP (mg/mL-N)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

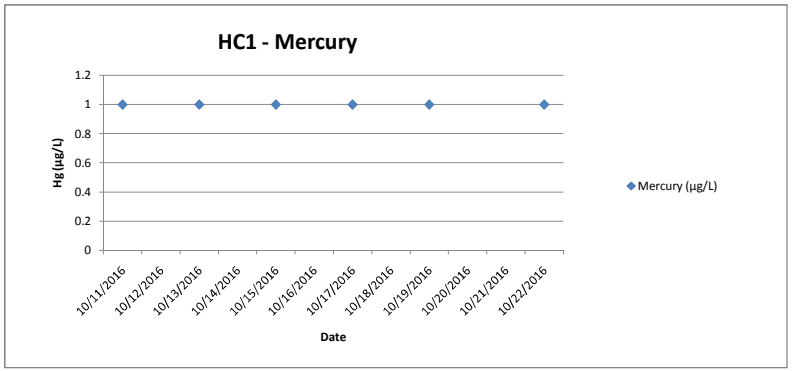

HC1 - Total Kjeldahl Nitrogen
TKN (mg/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

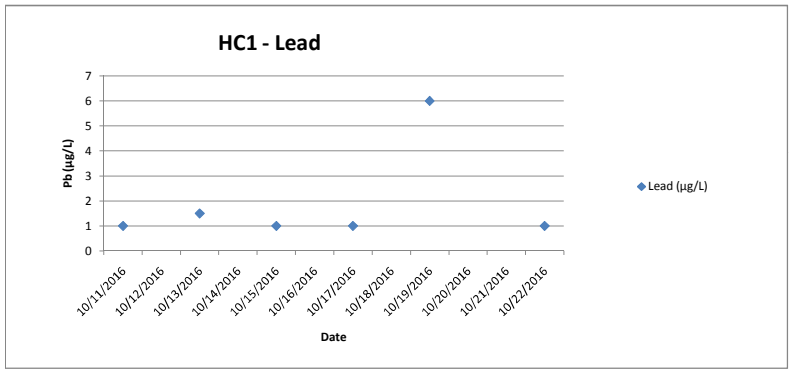

HC1 - Total Phosphorus
TP (mg/mL-N)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

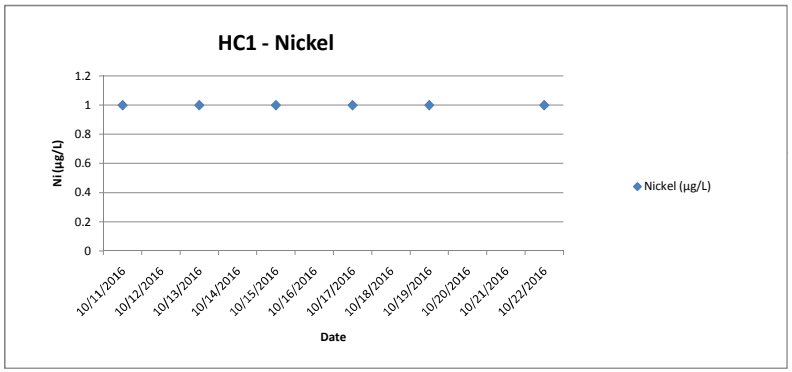

HC1 - Chromium
Cr (µg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

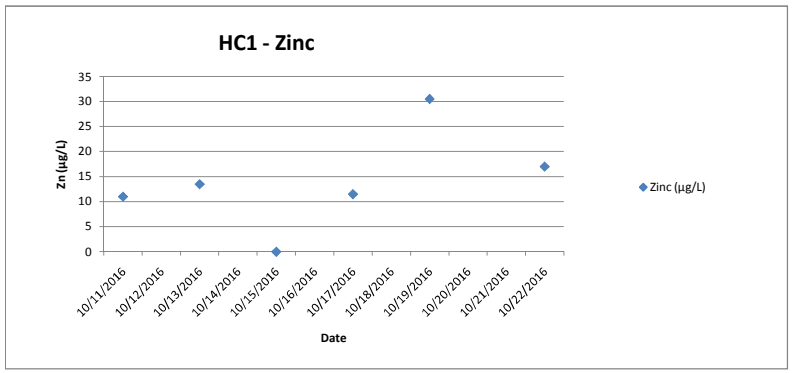

HC1 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

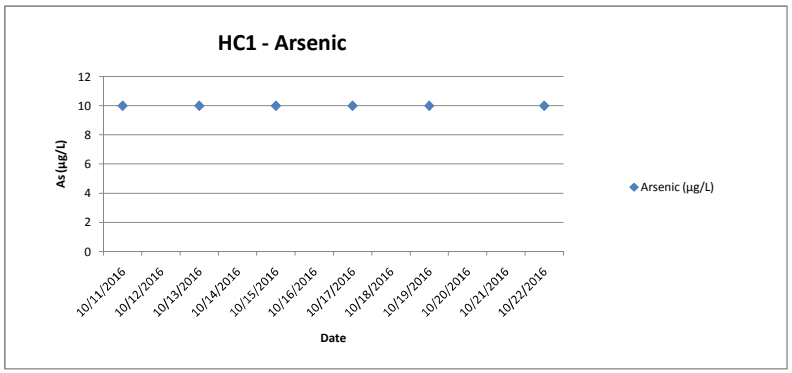

HC1 - Copper
Cu (µg/L)
0
2
4
6
8
10
12
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Copper (µg/L)

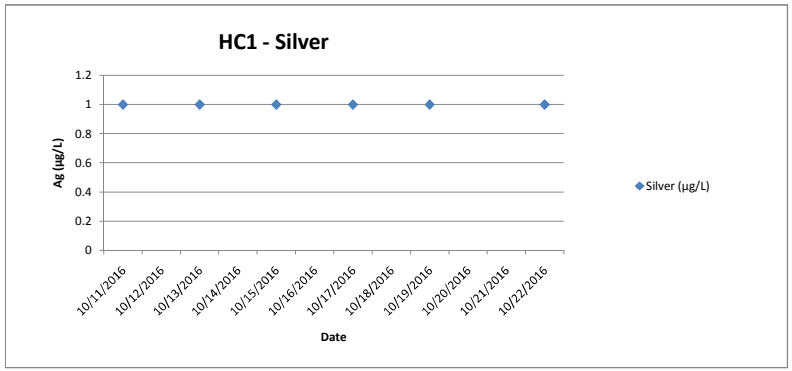

HC1 - Mercury
Hg (µg/L)
0
0.2
0.4
0.6
0.8
1
1.2
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Mercury (µg/L)

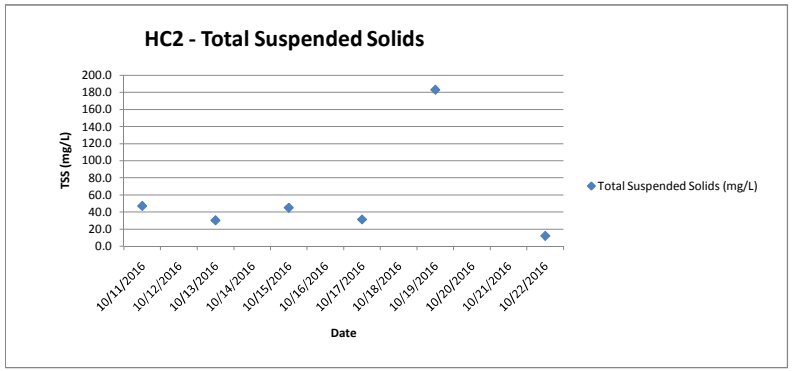

HC1 - Lead
Pb (µg/L)
0
1
2
3
4
5
6
7
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Lead (µg/L)

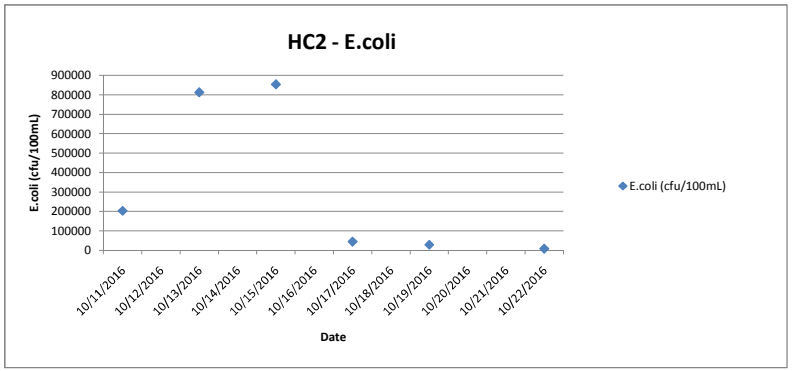

HC1 - Nickel
Ni (µg/L)
0
0.2
0.4
0.6
0.8
1
1.2
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nickel (µg/L)

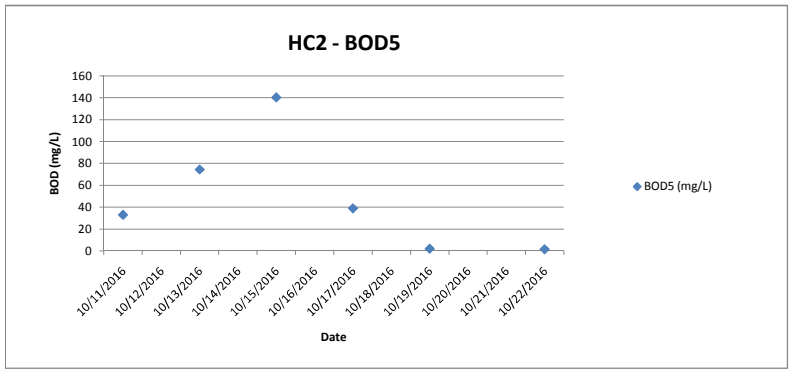

HC1 - Zinc
Zn (µg/L)
0
5
10
15
20
25
30
35
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Zinc (µg/L)

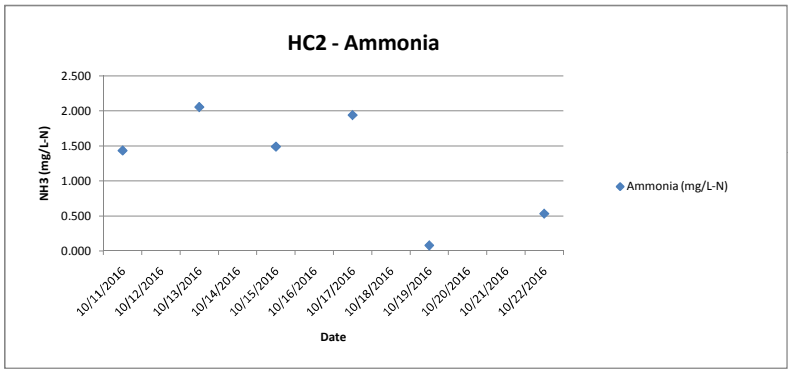

HC1 - Arsenic
As (µg/L)
0
2
4
6
8
10
12
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Arsenic (µg/L)

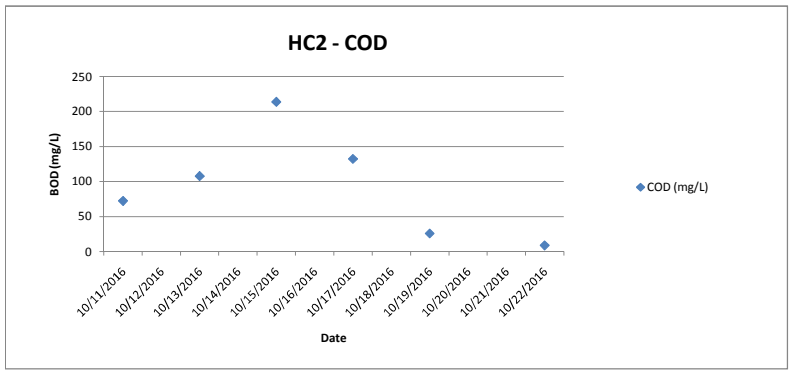

HC1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

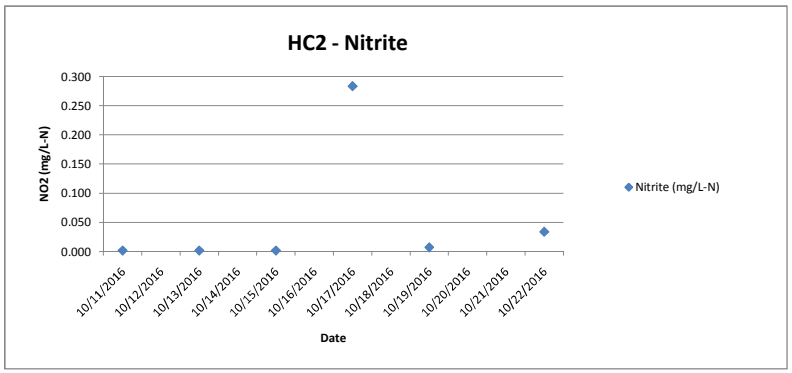

HC2 - Total Suspended Solids
TSS (mg/L)
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

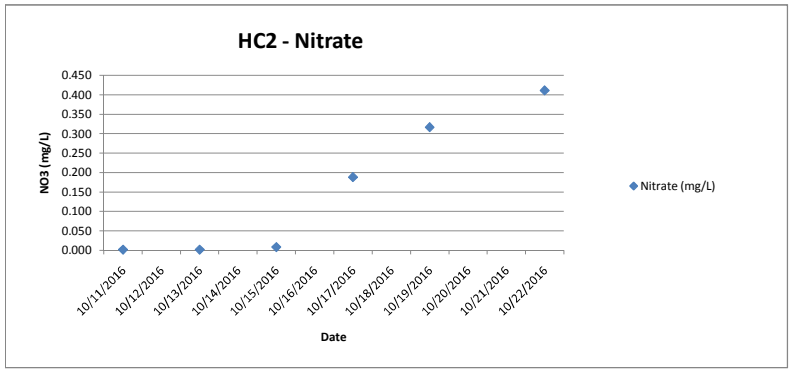

HC2 - E.coli
E.coli (cfu/100mL)
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

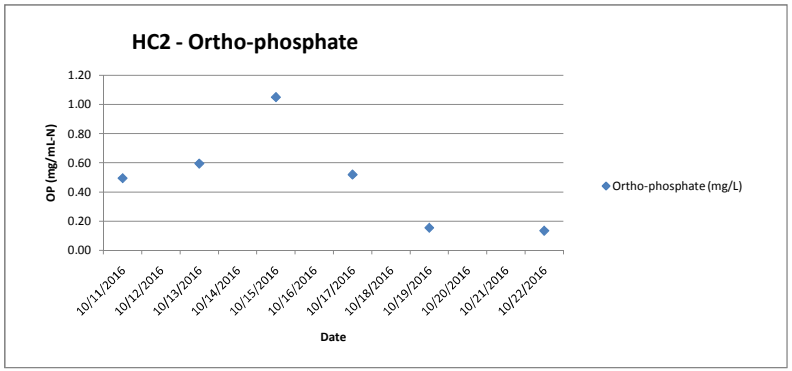

HC2 - BOD5
BOD (mg/L)
160
140
120
100
80
60
40
20
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

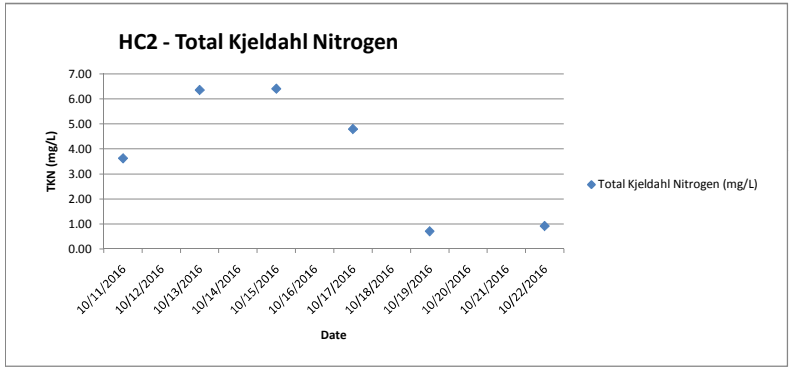

HC2 - Ammonia
NH3 (mg/L-N)
2.500
2.000
1.500
1.000
0.500
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

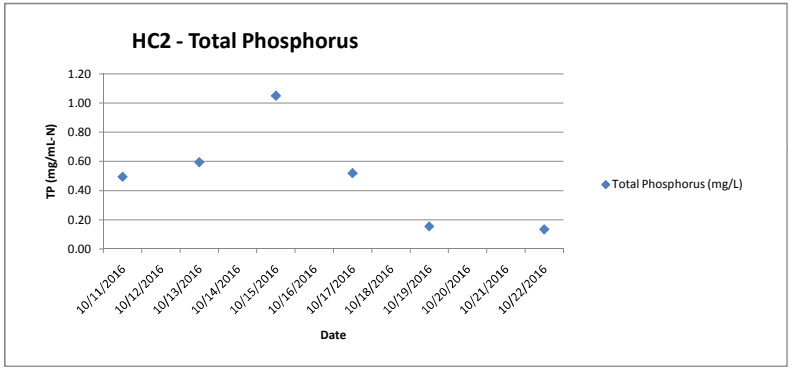

HC2 - COD
BOD (mg/L)
250
200
150
100
50
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

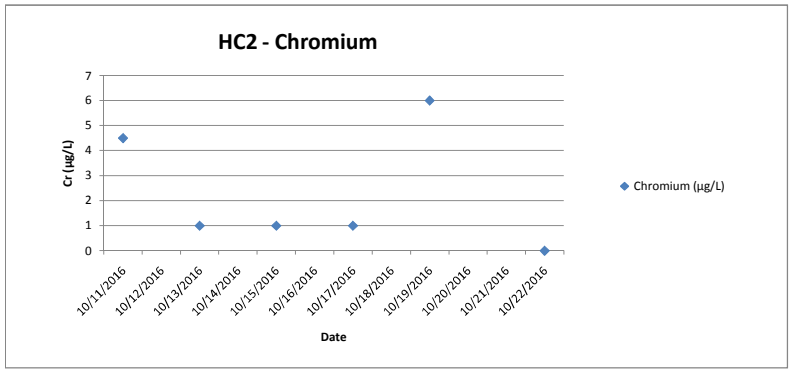

HC2 - Nitrite
NO2 (mg/L-N)
0.300
0.250
0.200
0.150
0.100
0.050
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

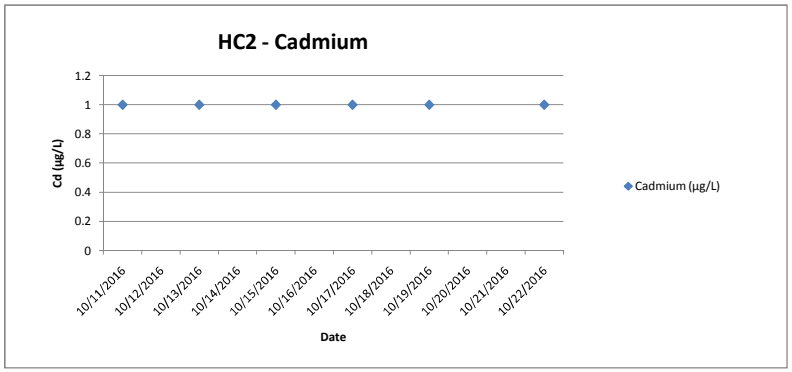

HC2 - Nitrate
NO3 (mg/L)
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

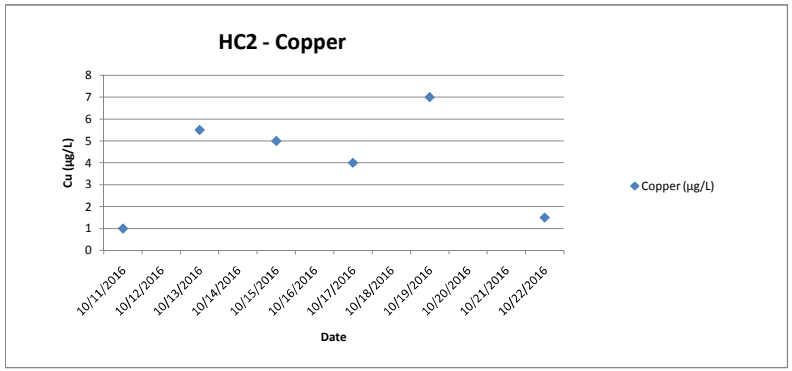

HC2 - Ortho-phosphate
OP (mg/mL-N)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

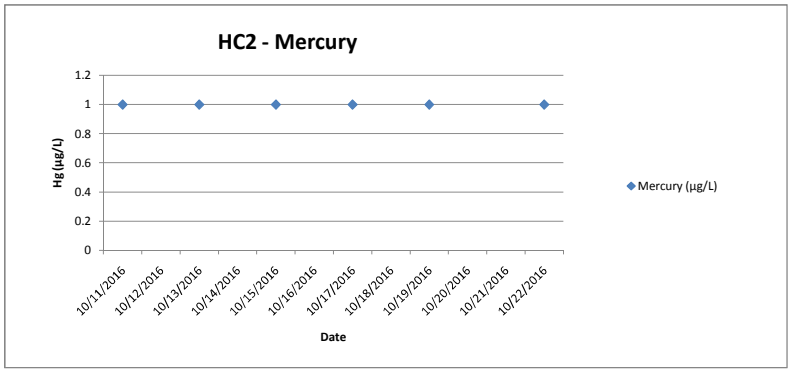

HC2 - Total Kjeldahl Nitrogen
TKN (mg/L)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

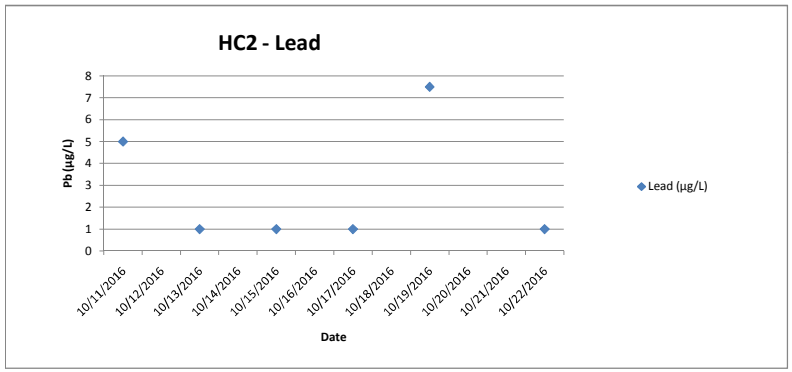

HC2 - Total Phosphorus
TP (mg/mL-N)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

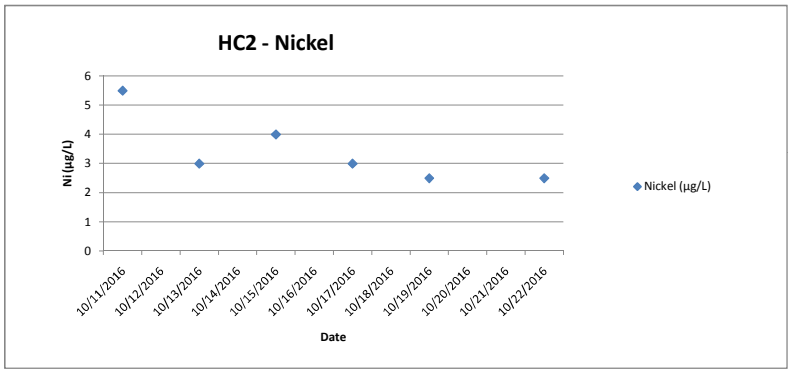

HC2 - Chromium
Cr (µg/L)
7
6
5
4
3
2
1
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

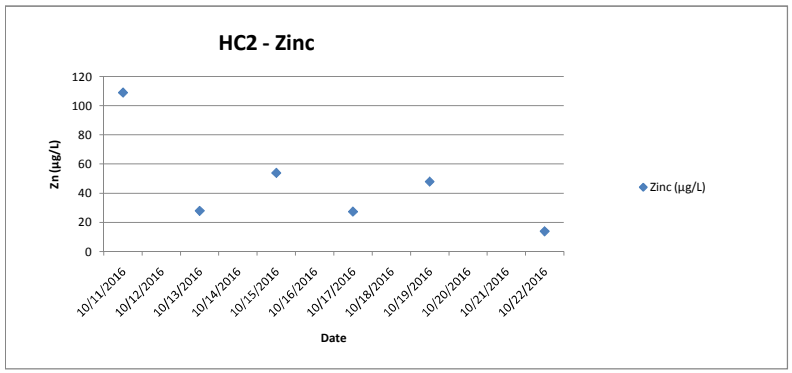

HC2 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

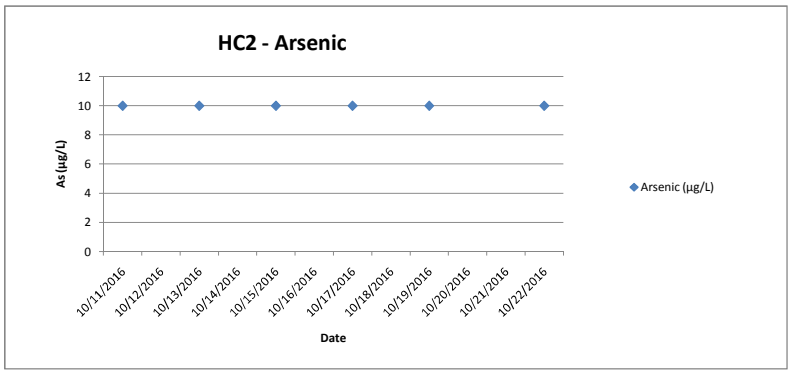

HC2 - Copper
Cu (µg/L)
Date
Copper (µg/L)

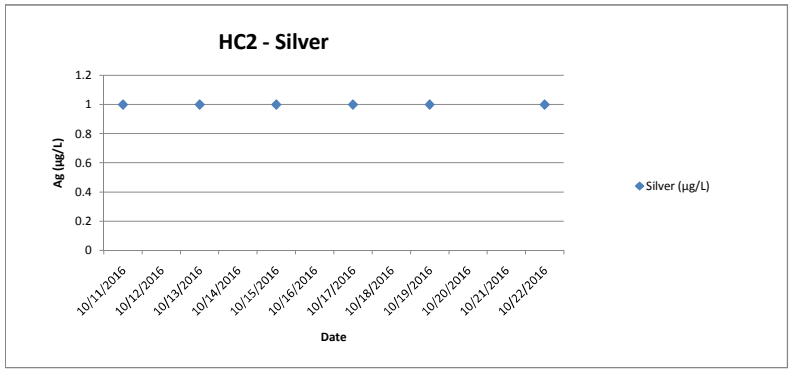

HC2 - Mercury
Hg (µg/L)
Date
Mercury (µg/L)

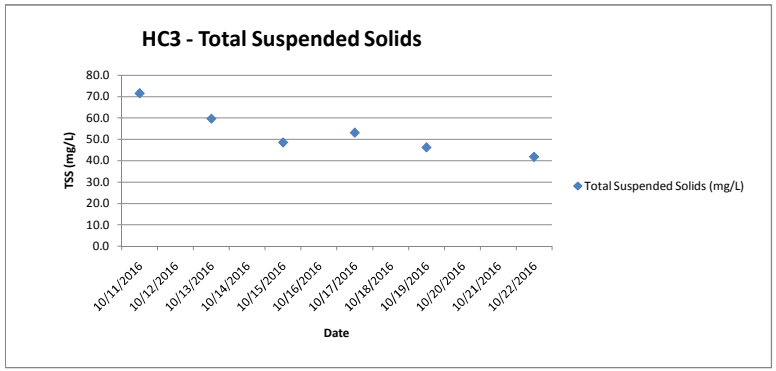

HC2 - Lead
Pb (µg/L)
Date
Lead (µg/L)

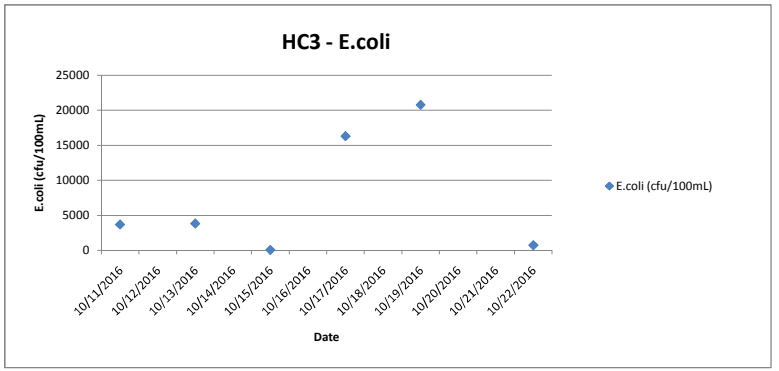

HC2 - Nickel
Ni (µg/L)
Date
Nickel (µg/L)

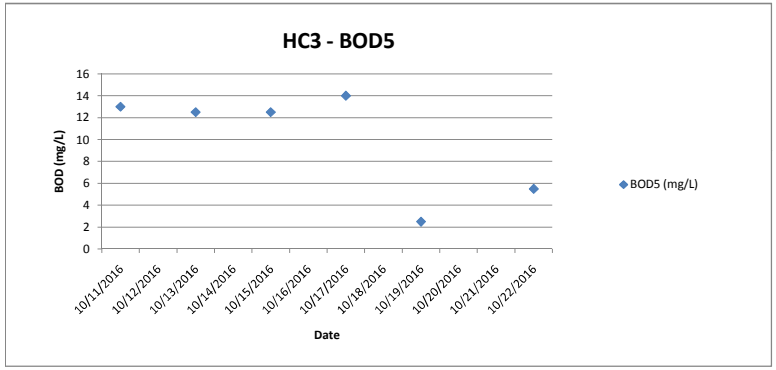

HC2 - Zinc
Zn (µg/L)
Date
Zinc (µg/L)

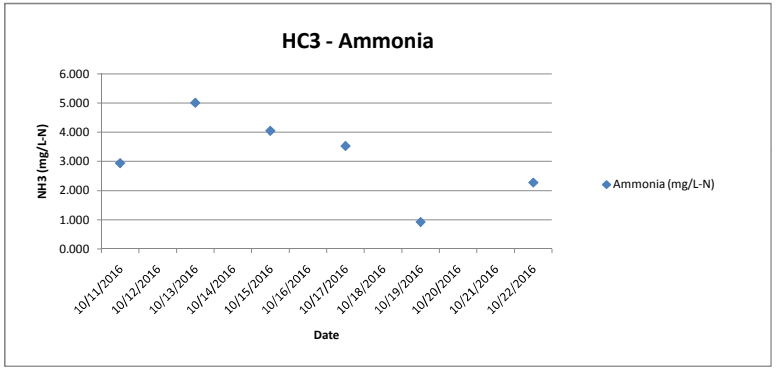

HC2 - Arsenic
As (µg/L)
Date
Arsenic (µg/L)

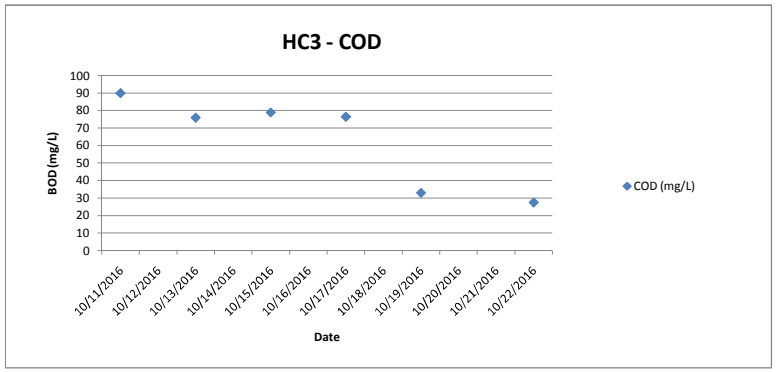

HC2 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

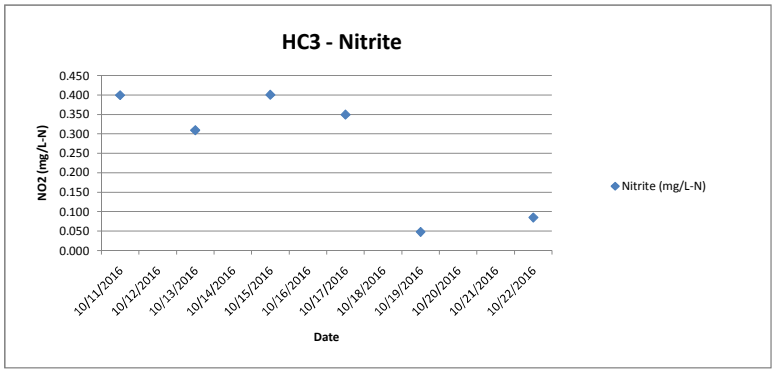

HC3 - Total Suspended Solids
TSS (mg/L)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

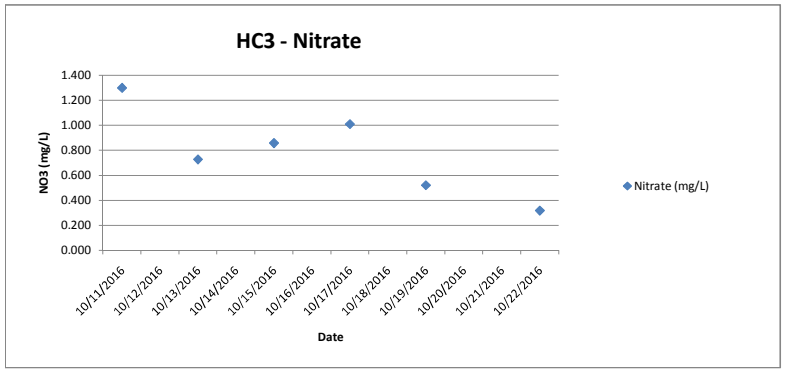

HC3 - E.coli
E.coli (cfu/100mL)
25000
20000
15000
10000
5000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

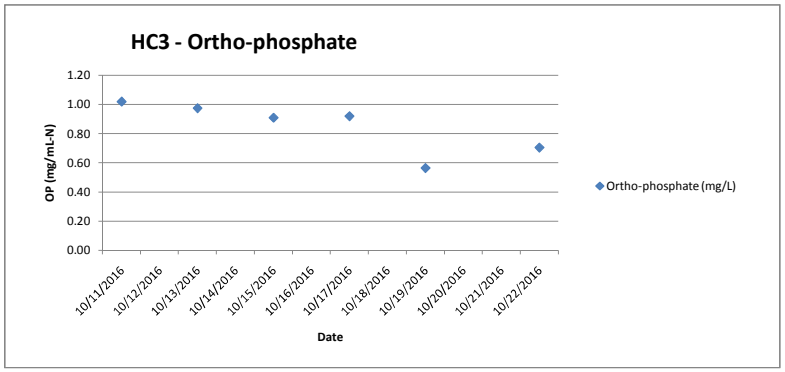

HC3 - BOD5
BOD (mg/L)
16
14
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

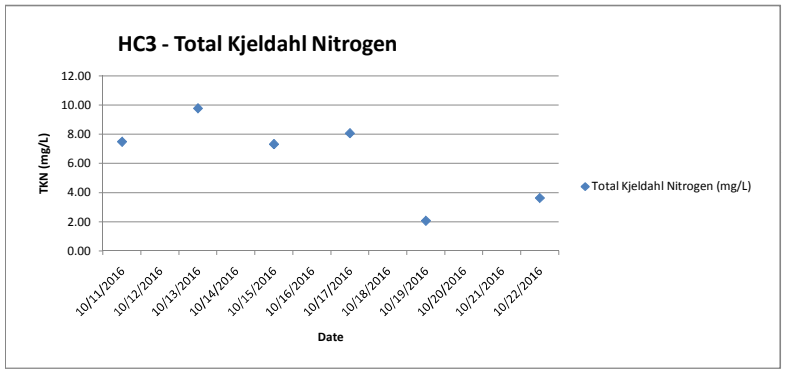

HC3 - Ammonia
NH3 (mg/L-N)
6.000
5.000
4.000
3.000
2.000
1.000
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

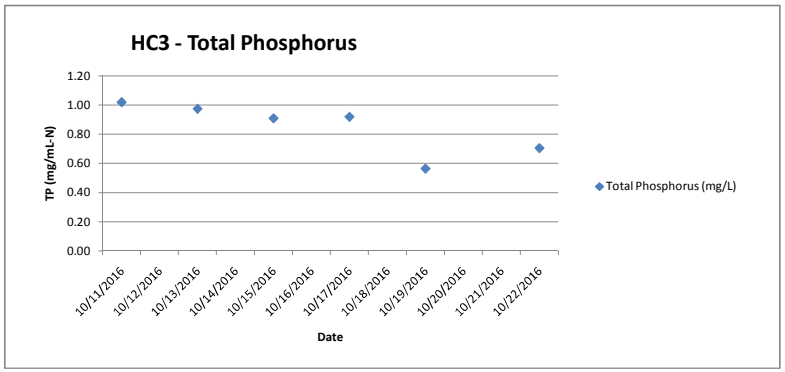

HC3 - COD
BOD (mg/L)
100
90
80
70
60
50
40
30
20
10
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

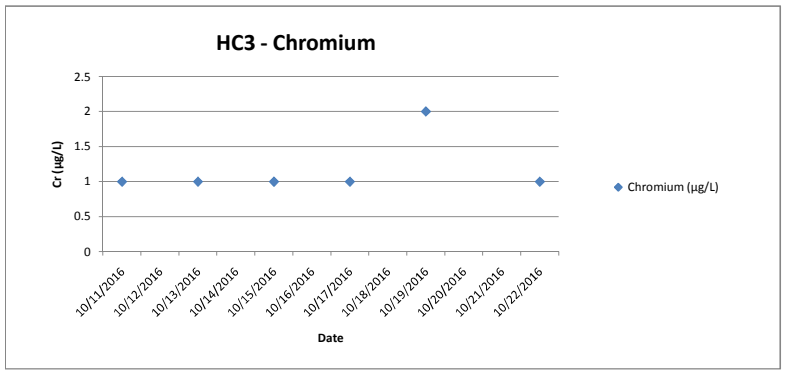

HC3 - Nitrite
NO2 (mg/L-N)
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

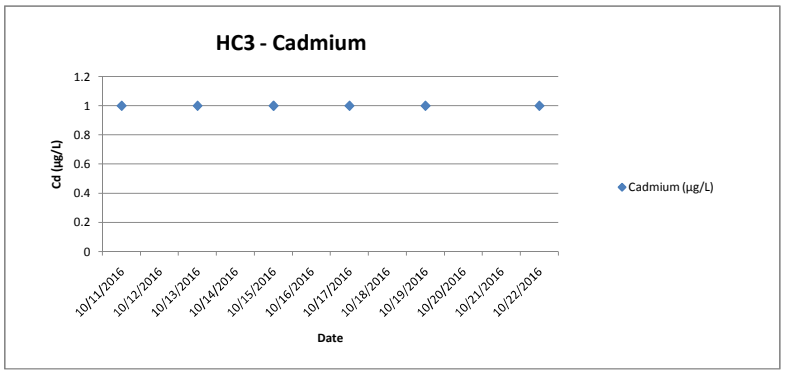

HC3 - Nitrate
NO3 (mg/L)
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

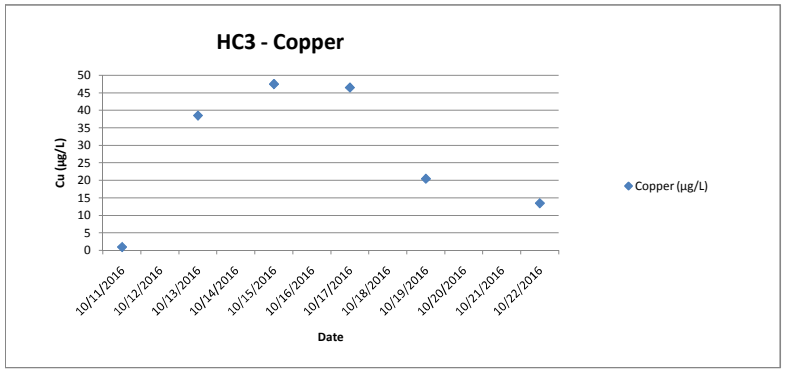

HC3 - Ortho-phosphate
OP (mg/mL-N)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

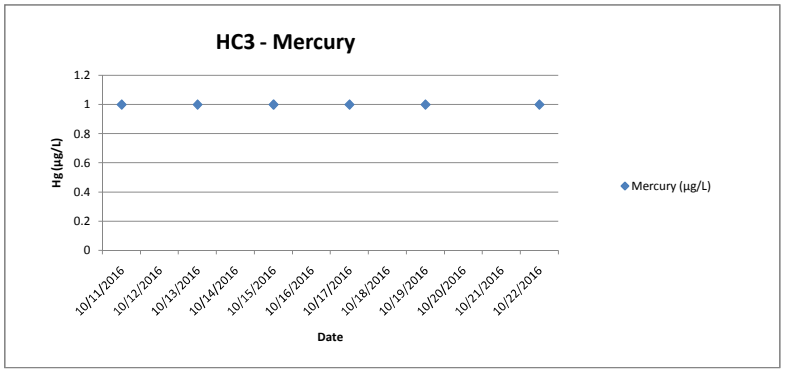

HC3 - Total Kjeldahl Nitrogen
TKN (mg/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

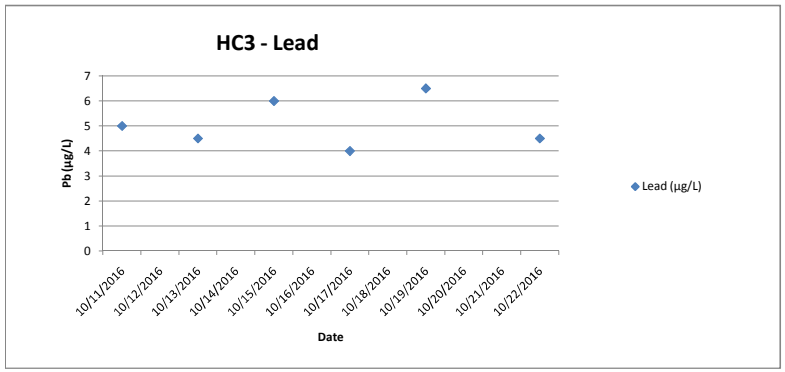

HC3 - Total Phosphorus
TP (mg/mL-N)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

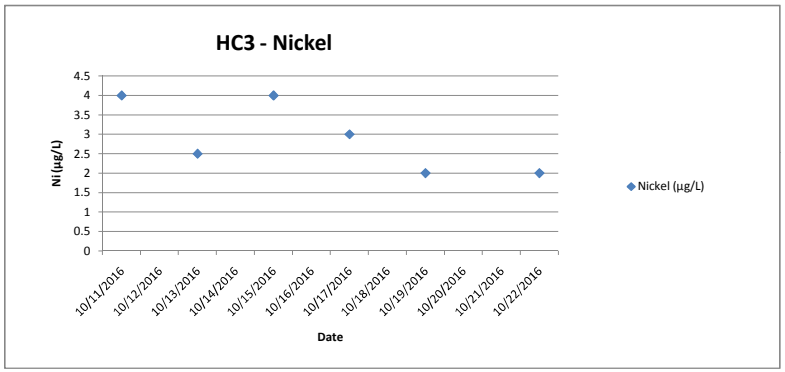

HC3 - Chromium
Cr (µg/L)
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

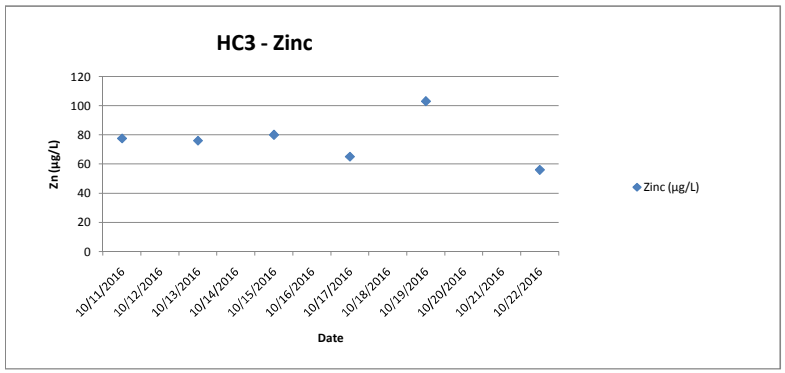

HC3 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

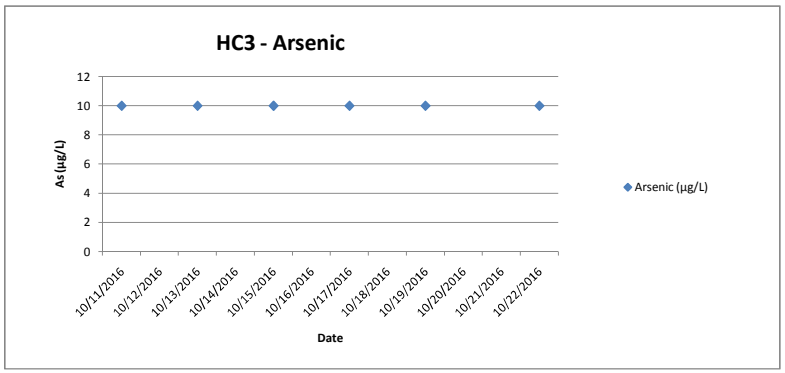

HC3 - Copper
Cu (µg/L)
50
45
40
35
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Copper (µg/L)

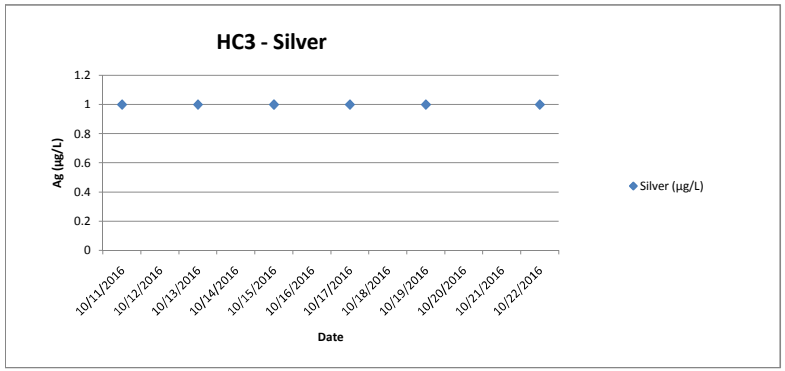

HC3 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Mercury (µg/L)

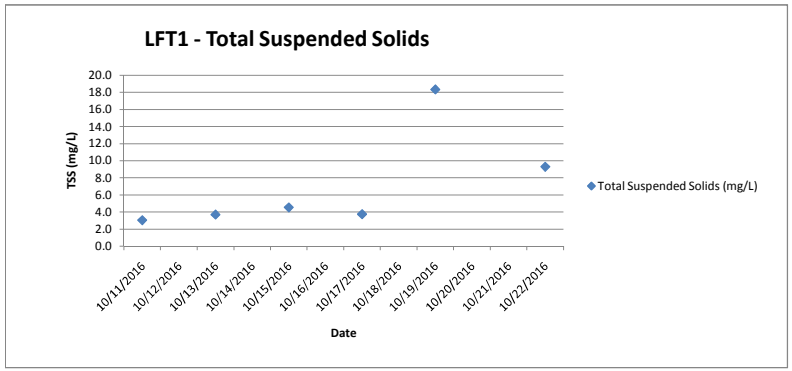

HC3 - Lead
Pb (µg/L)
7
6
5
4
3
2
1
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Lead (µg/L)

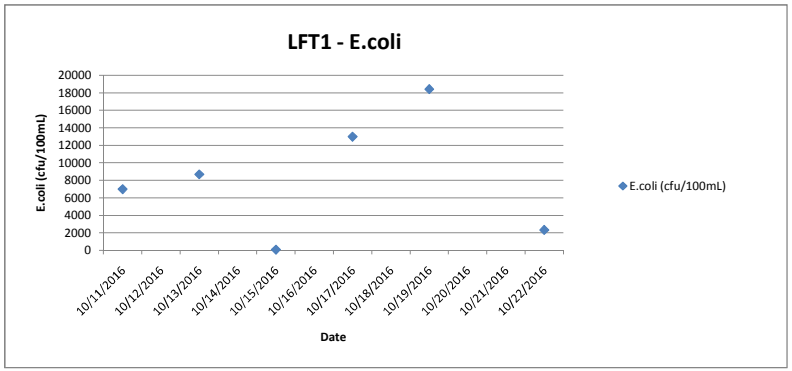

HC3 - Nickel
Ni (µg/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nickel (µg/L)

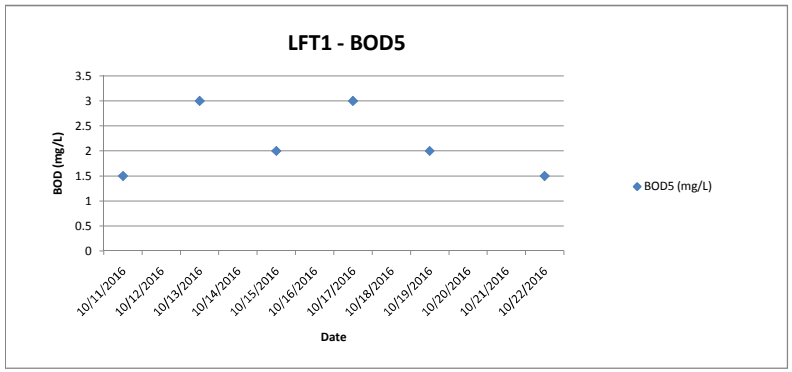

HC3 - Zinc
Zn (µg/L)
120
100
80
60
40
20
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Zinc (µg/L)

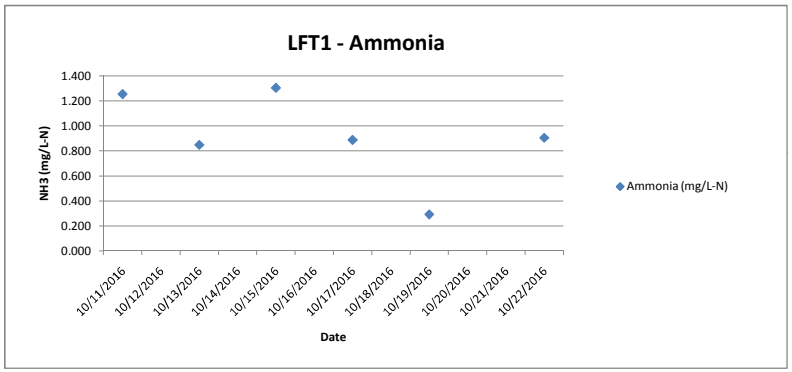

HC3 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Arsenic (µg/L)

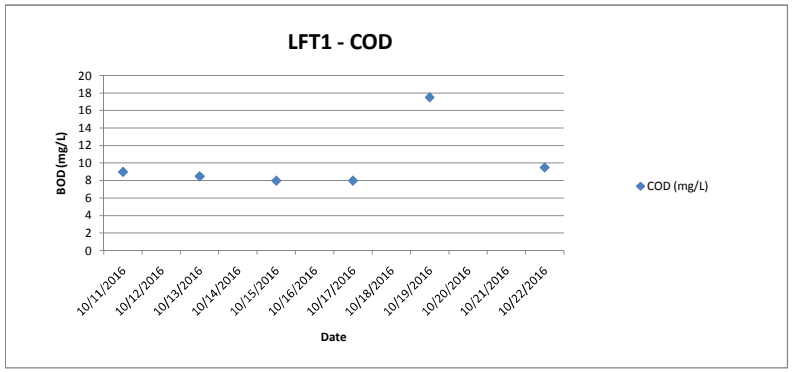

HC3 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

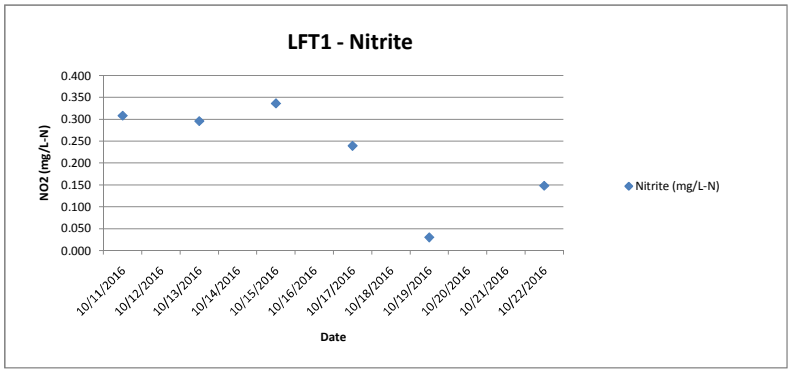

LFT1 - Total Suspended Solids
TSS (mg/L)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

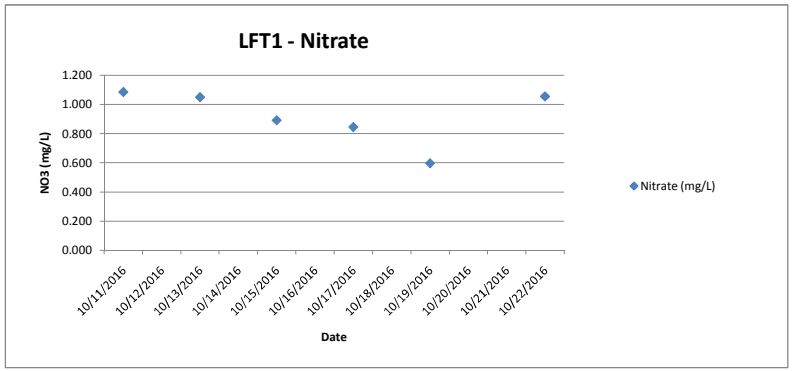

LFT1 - E.coli
E.coli (cfu/100mL)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

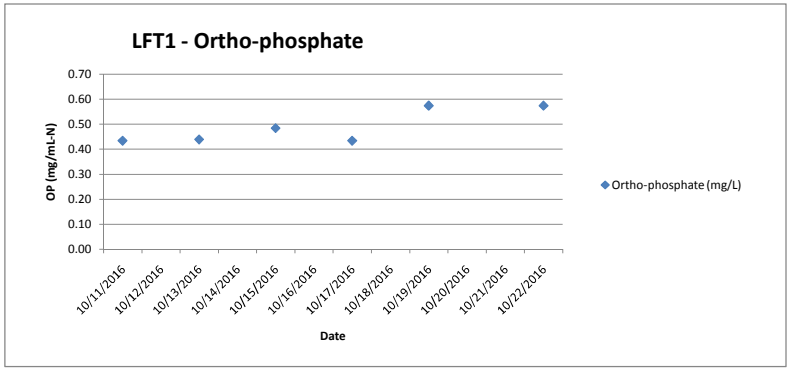

LFT1 - BOD5
BOD (mg/L)
3.5
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

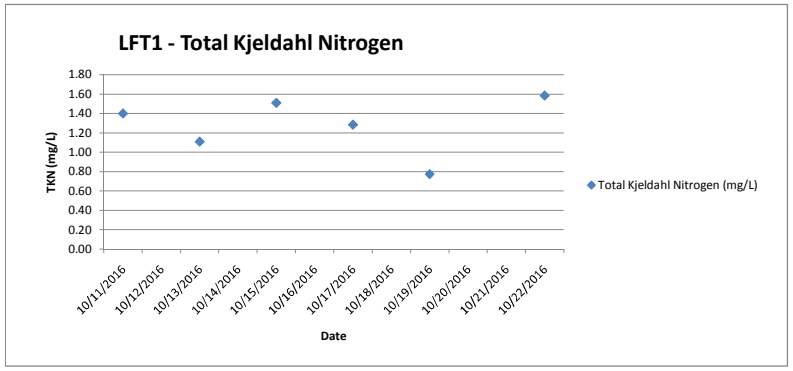

LFT1 - Ammonia
NH3 (mg/L-N)
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

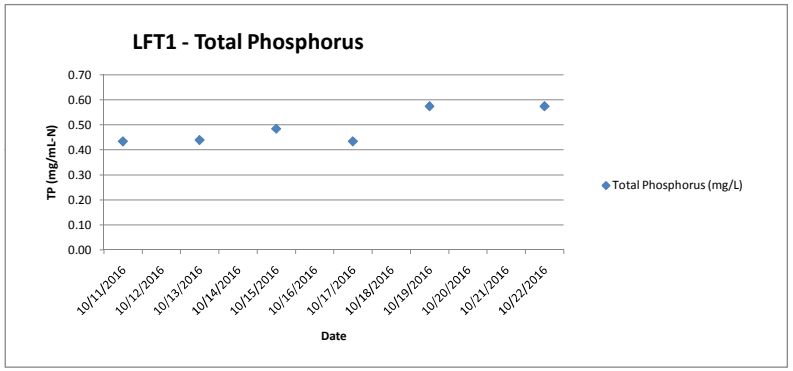

LFT1 - COD
BOD (mg/L)
20
18
16
14
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

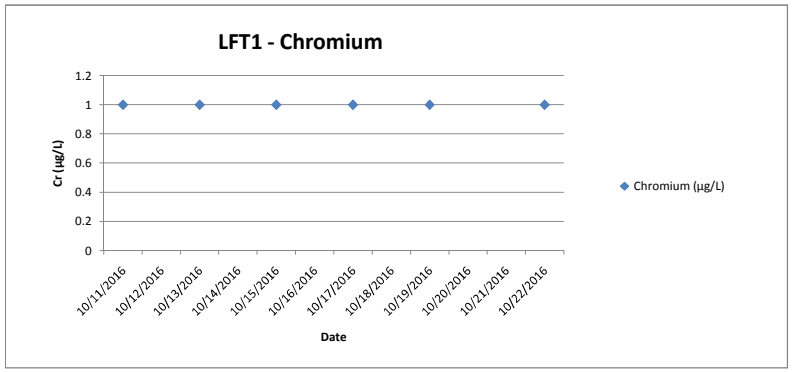

LFT1 - Nitrite
NO2 (mg/L-N)
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

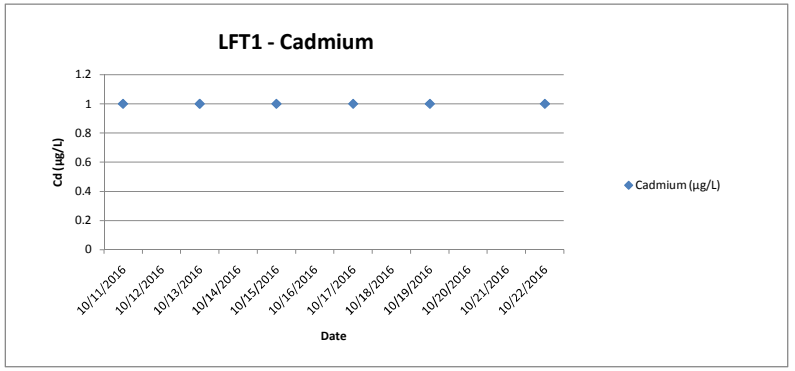

LFT1 - Nitrate
NO3 (mg/L)
1.200
1.000
0.800
0.600
0.400
0.200
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

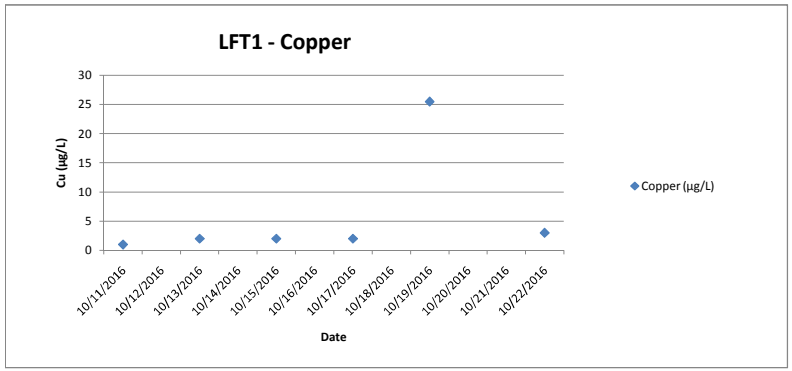

LFT1 - Ortho-phosphate
OP (mg/mL-N)
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

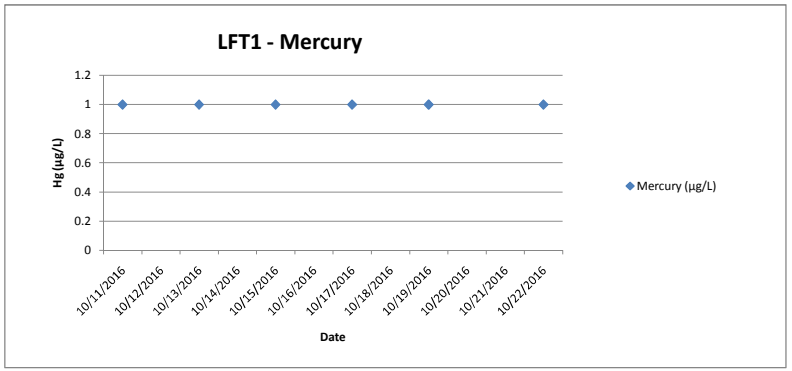

LFT1 - Total Kjeldahl Nitrogen
TKN (mg/L)
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

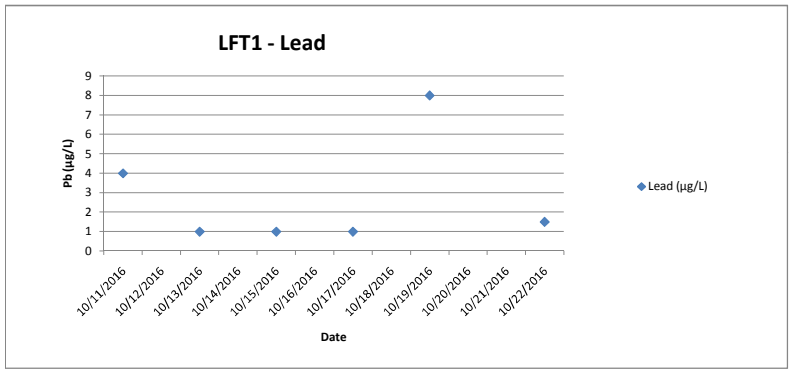

LFT1 - Total Phosphorus
TP (mg/mL-N)
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

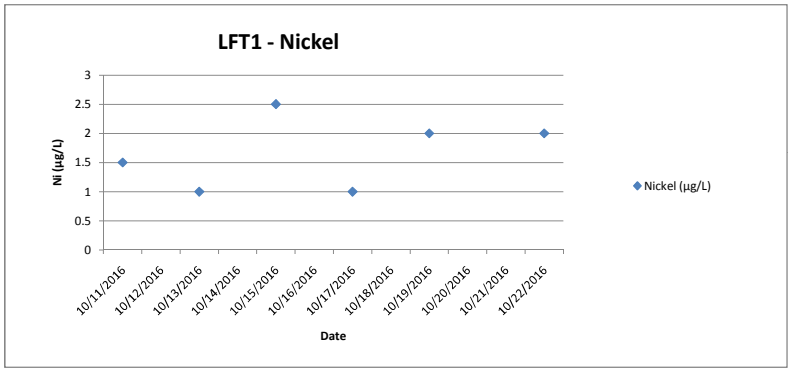

LFT1 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

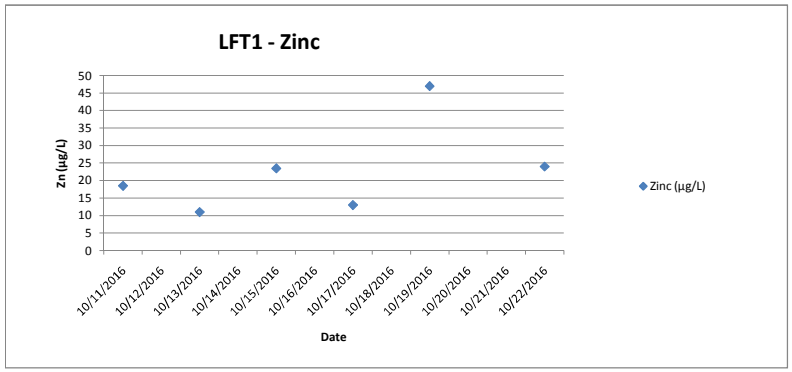

LFT1 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

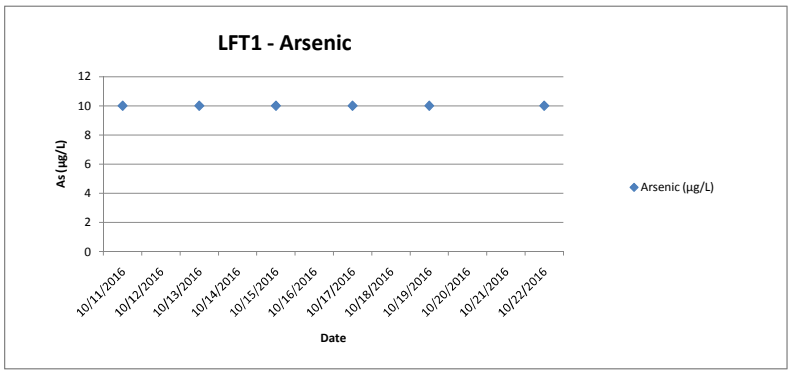

LFT1 - Copper
Cu (µg/L)
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Copper (µg/L)

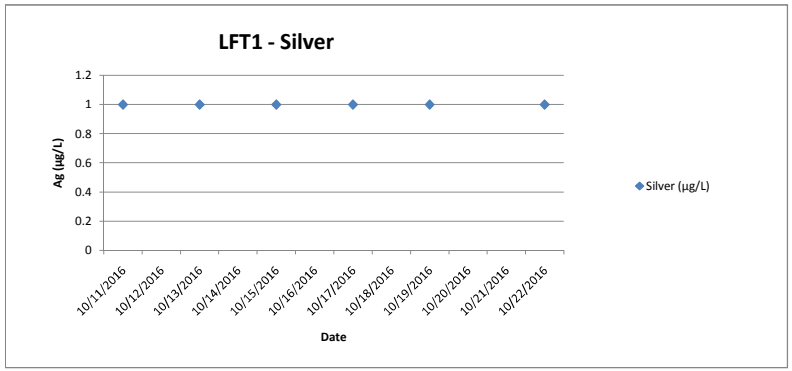

LFT1 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Mercury (µg/L)

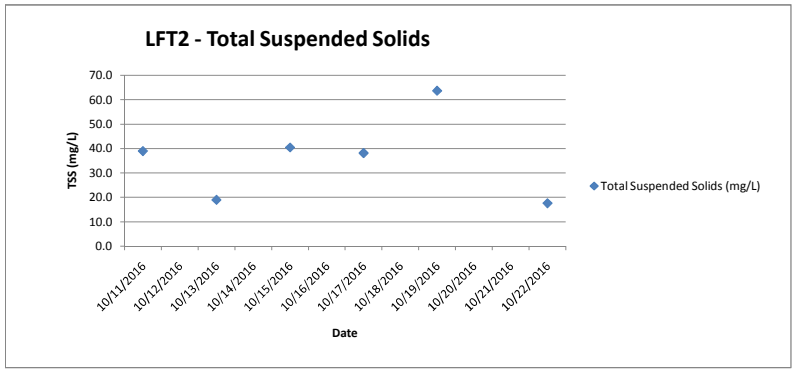

LFT1 - Lead
Pb (µg/L)
9
8
7
6
5
4
3
2
1
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Lead (µg/L)

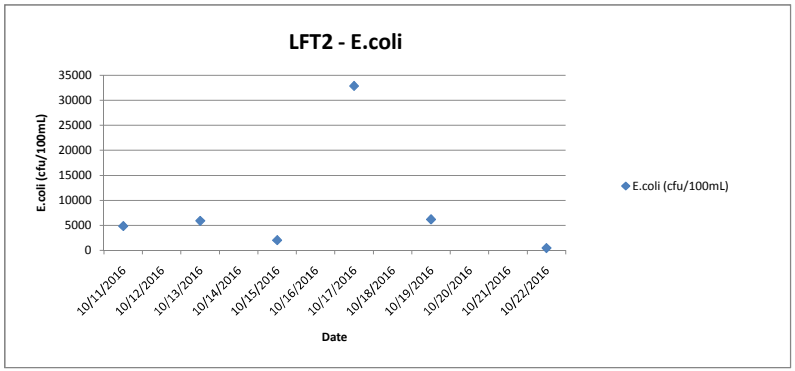

LFT1 - Nickel
Ni (µg/L)
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nickel (µg/L)

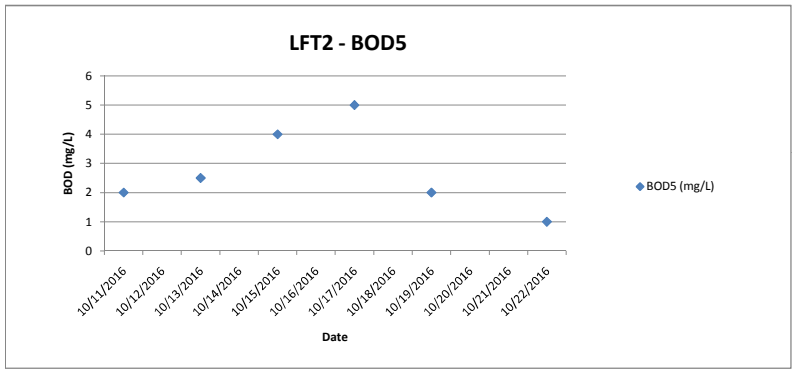

LFT1 - Zinc
Zn (µg/L)
50
45
40
35
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Zinc (µg/L)

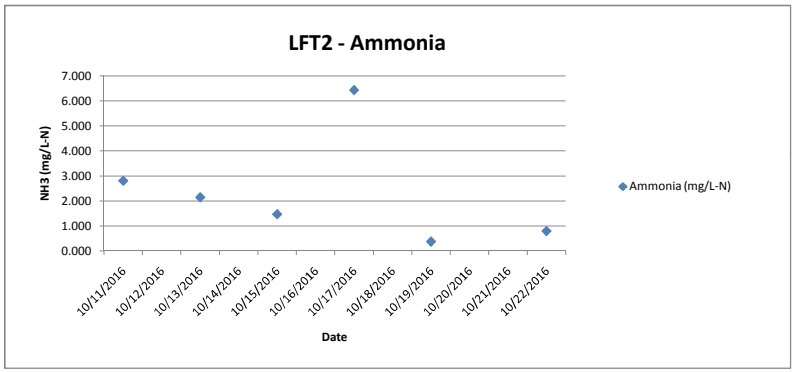

LFT1 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Arsenic (µg/L)

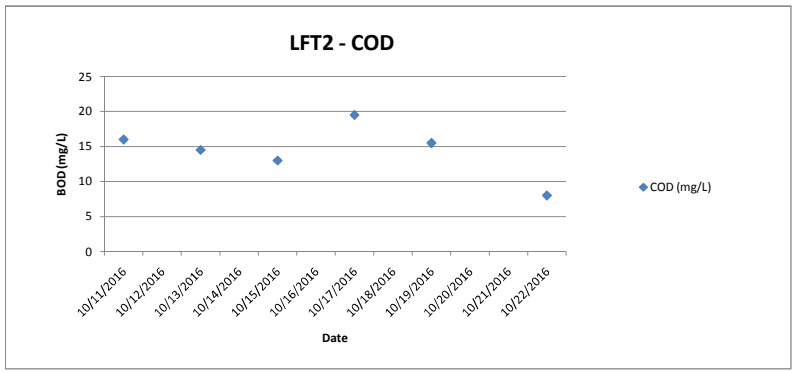

LFT1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

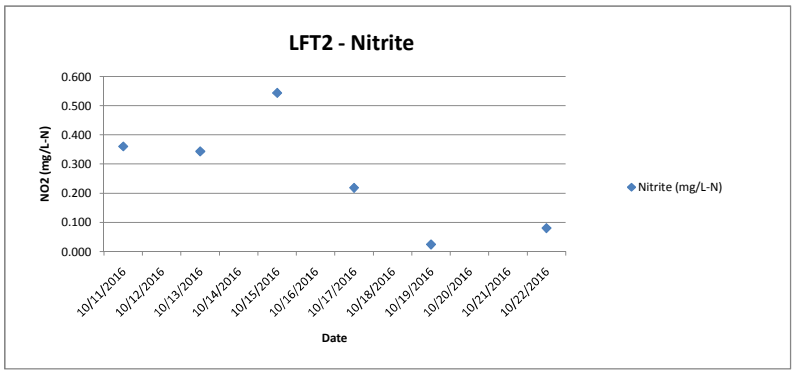

LFT2 - Total Suspended Solids
TSS (mg/L)
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

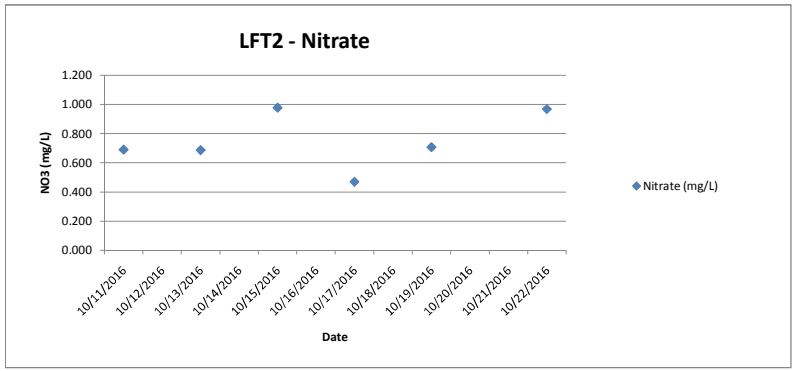

LFT2 - E.coli
E.coli (cfu/100mL)
35000
30000
25000
20000
15000
10000
5000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

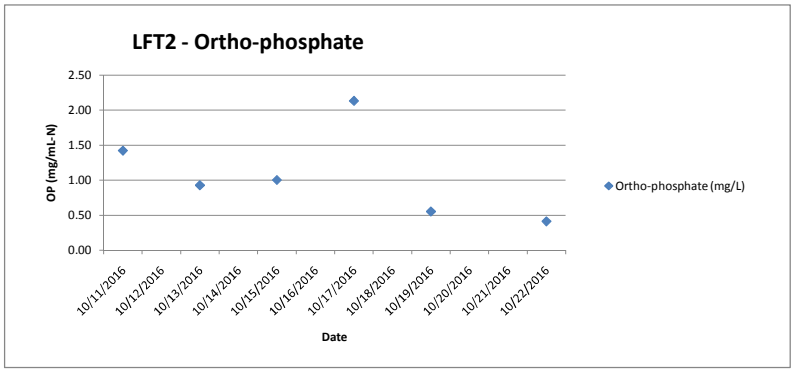

LFT2 - BOD5
BOD (mg/L)
6
5
4
3
2
1
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

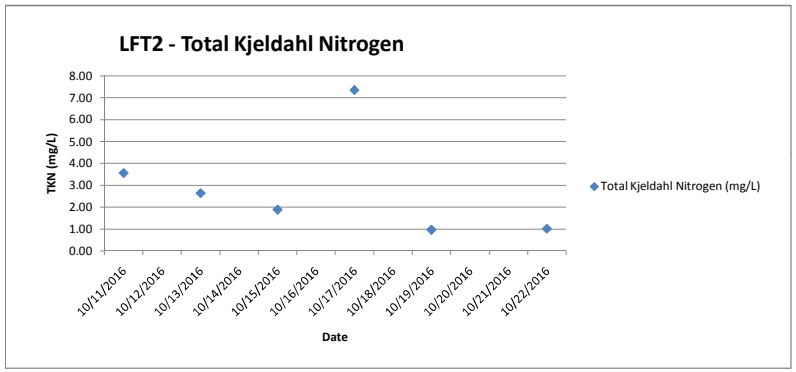

LFT2 - Ammonia
NH3 (mg/L-N)
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

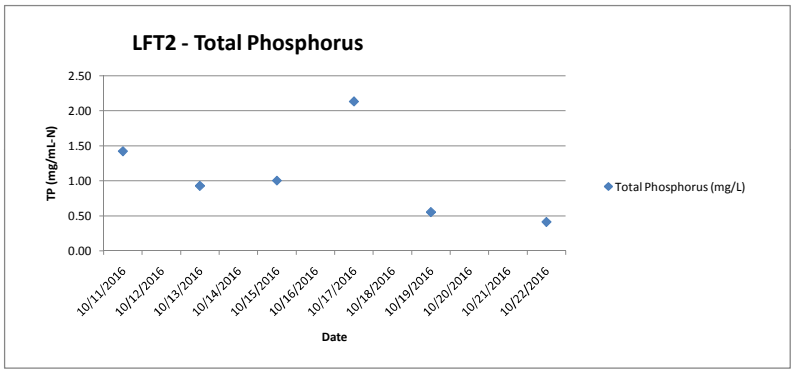

LFT2 - COD
BOD (mg/L)
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

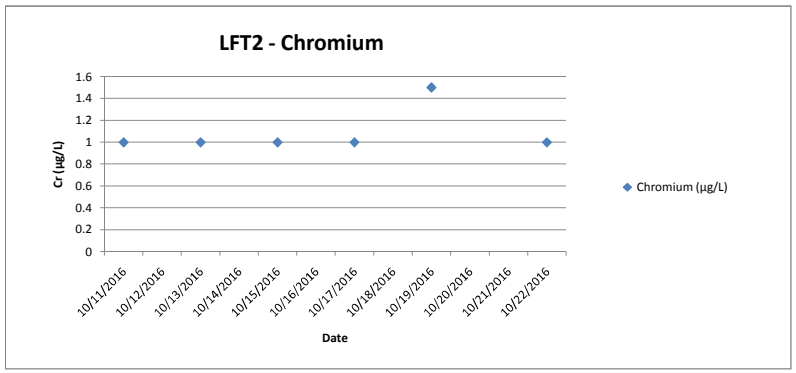

LFT2 - Nitrite
NO2 (mg/L-N)
0.600
0.500
0.400
0.300
0.200
0.100
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

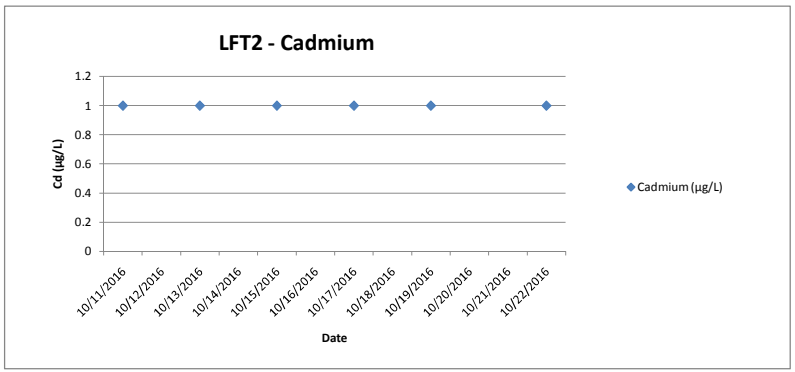

LFT2 - Nitrate
NO3 (mg/L)
1.200
1.000
0.800
0.600
0.400
0.200
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

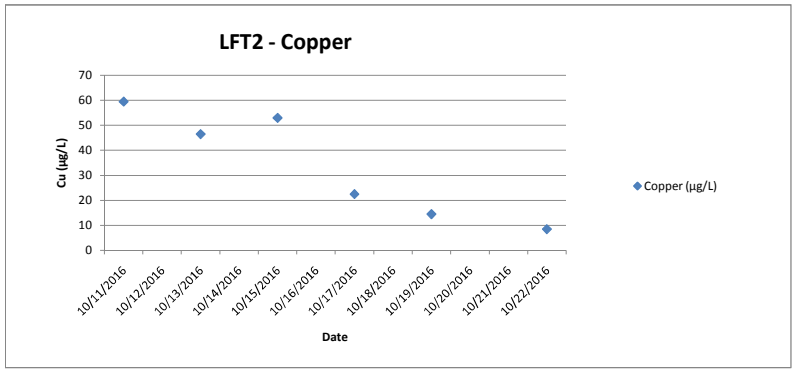

LFT2 - Ortho-phosphate
OP (mg/mL-N)
2.50
2.00
1.50
1.00
0.50
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

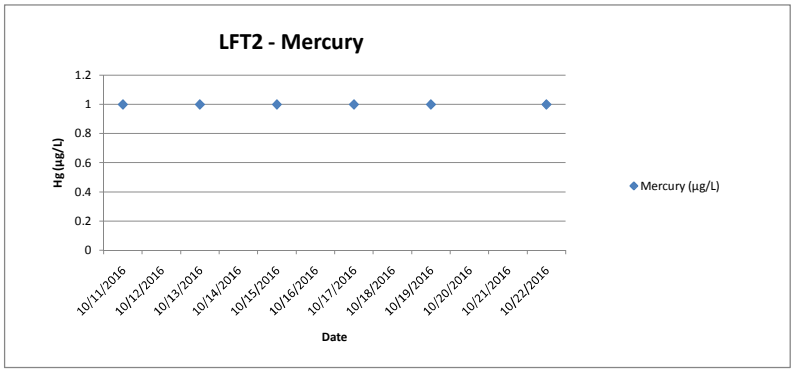

LFT2 - Total Kjeldahl Nitrogen
TKN (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

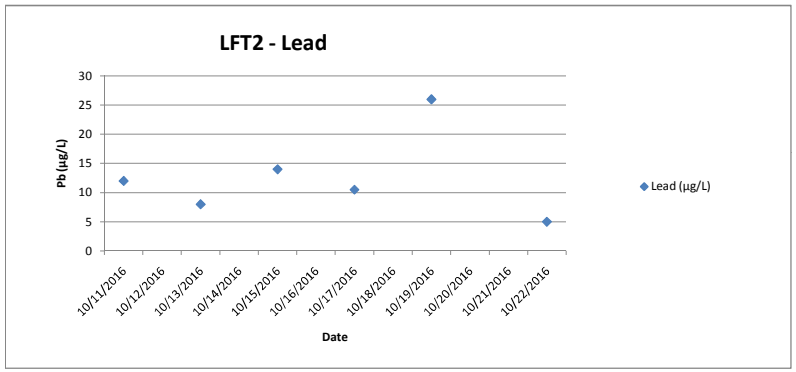

LFT2 - Total Phosphorus
TP (mg/mL-N)
2.50
2.00
1.50
1.00
0.50
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

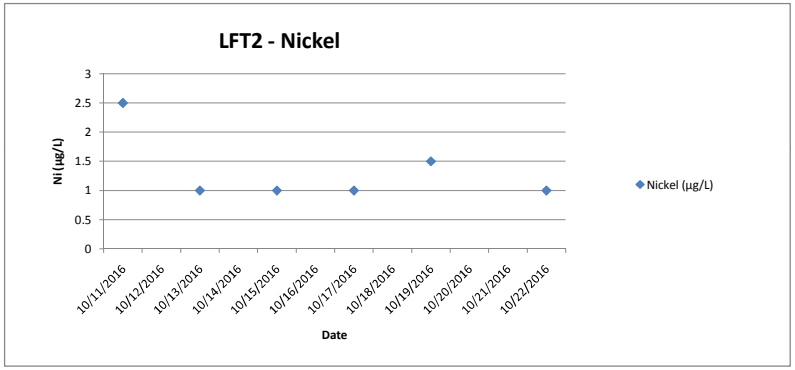

LFT2 - Chromium
Cr (µg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

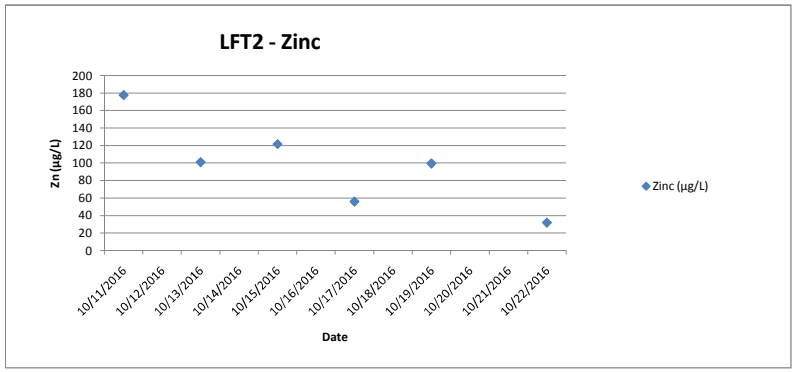

LFT2 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

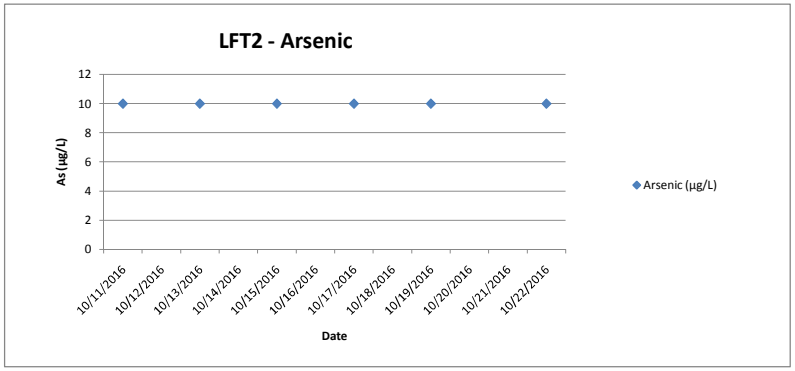

LFT2 - Copper
Cu (µg/L)
70
60
50
40
30
20
10
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Copper (µg/L)

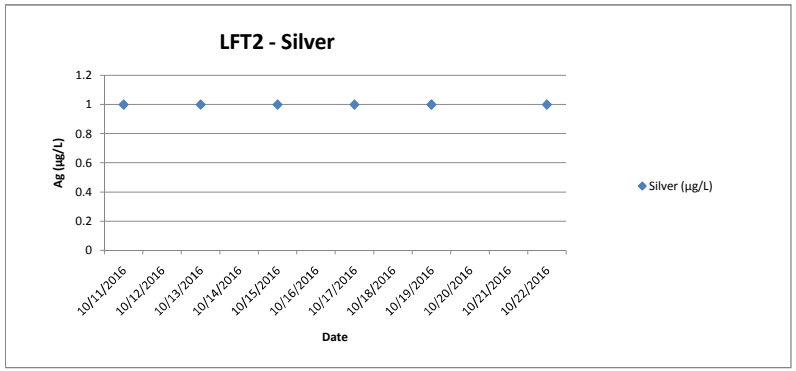

LFT2 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Mercury (µg/L)

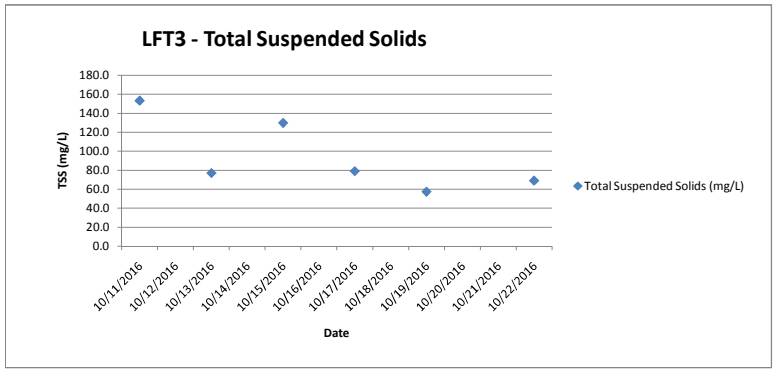

LFT2 - Lead
Pb (µg/L)
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Lead (µg/L)

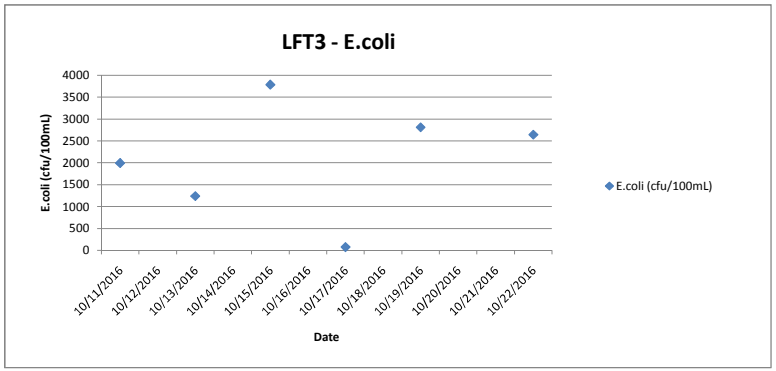

LFT2 - Nickel
Ni (µg/L)
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nickel (µg/L)

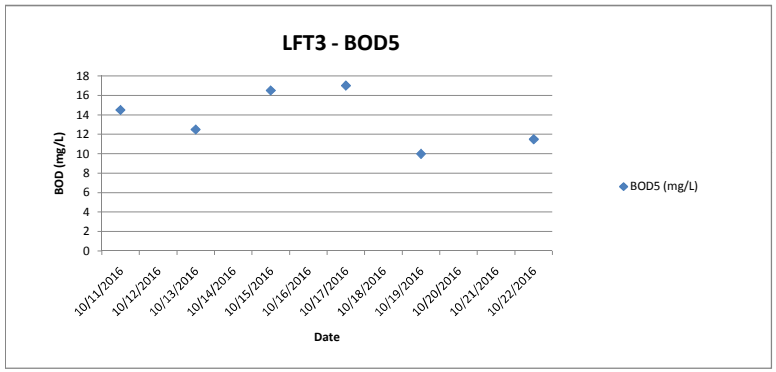

LFT2 - Zinc
Zn (µg/L)
200
180
160
140
120
100
80
60
40
20
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Zinc (µg/L)

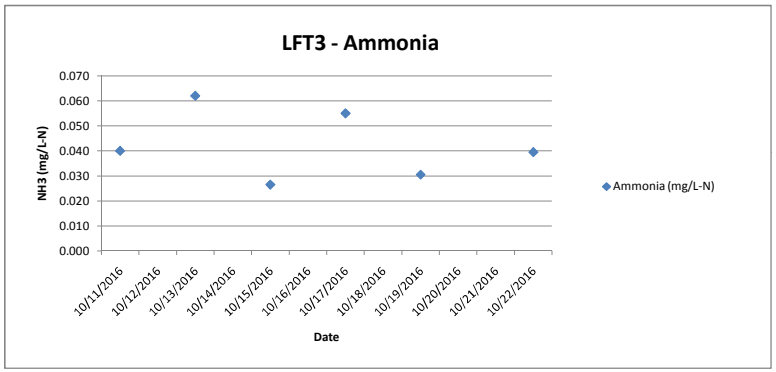

LFT2 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Arsenic (µg/L)

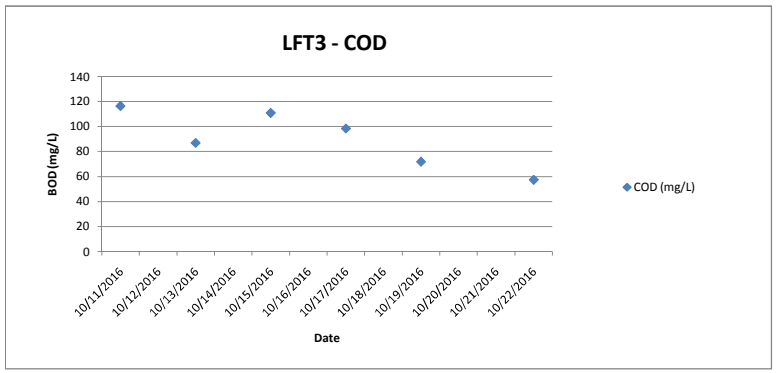

LFT2 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

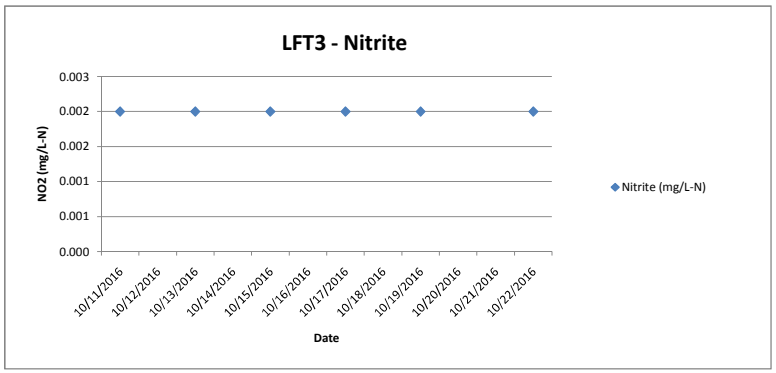

LFT3 - Total Suspended Solids
TSS (mg/L)
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

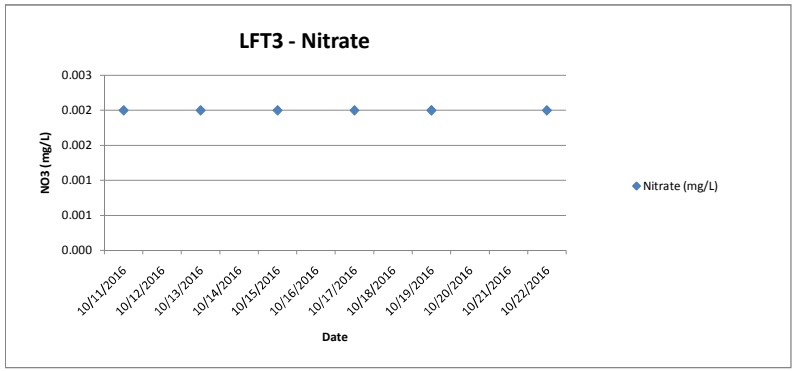

LFT3 - E.coli
E.coli (cfu/100mL)
4000
3500
3000
2500
2000
1500
1000
500
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

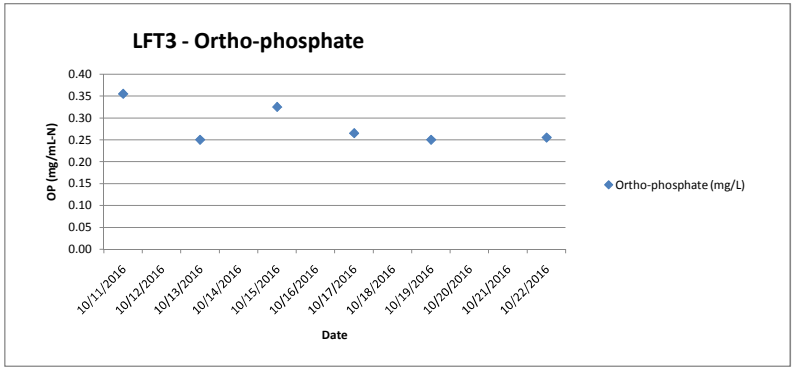

LFT3 - BOD5
BOD (mg/L)
18
16
14
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

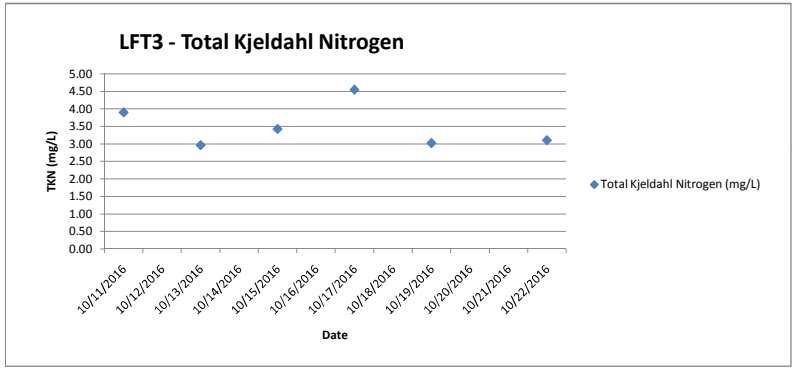

LFT3 - Ammonia
NH3 (mg/L-N)
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

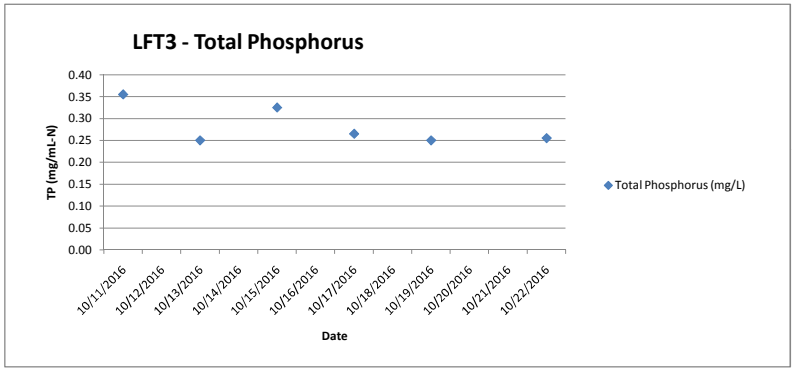

LFT3 - COD
BOD (mg/L)
140
120
100
80
60
40
20
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

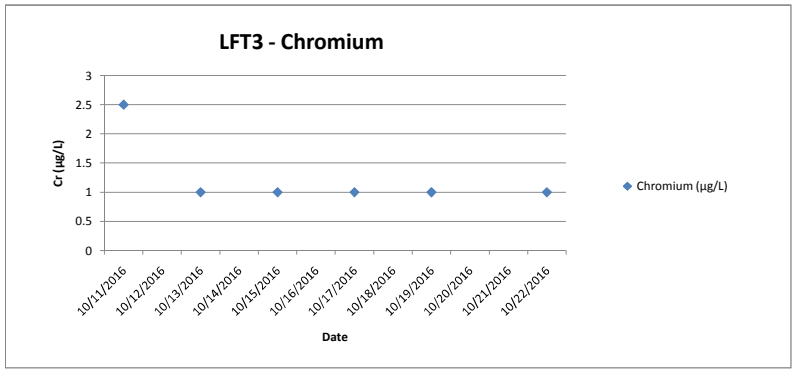

LFT3 - Nitrite
NO2 (mg/L-N)
0.003
0.002
0.002
0.001
0.001
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

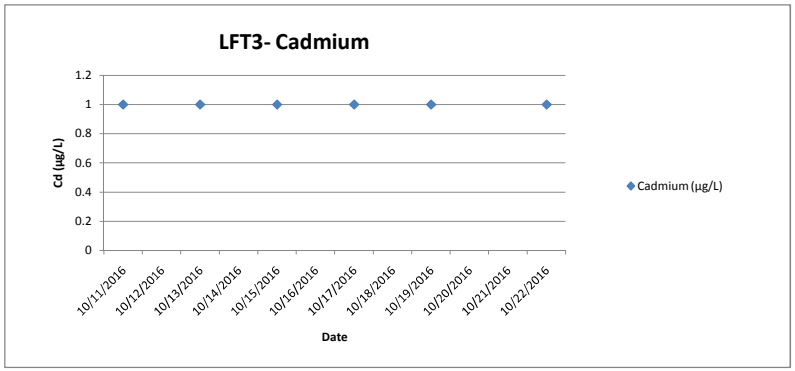

LFT3 - Nitrate
NO3 (mg/L)
0.003
0.002
0.002
0.001
0.001
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

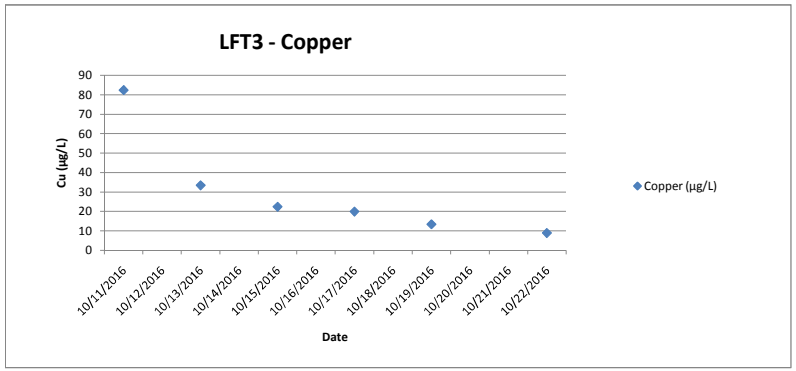

LFT3 - Ortho-phosphate
OP (mg/mL-N)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

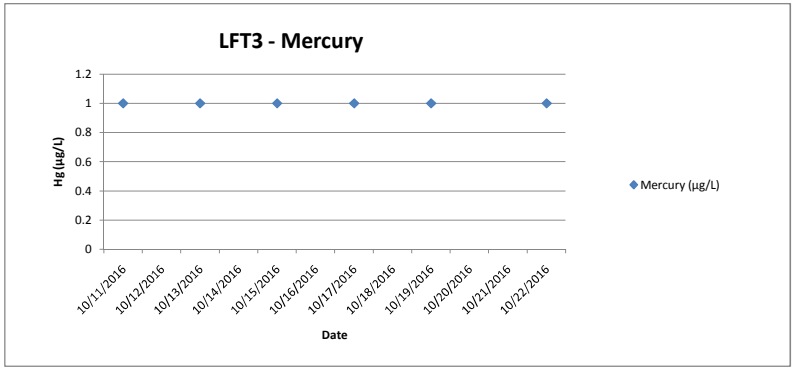

LFT3 - Total Kjeldahl Nitrogen
TKN (mg/L)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

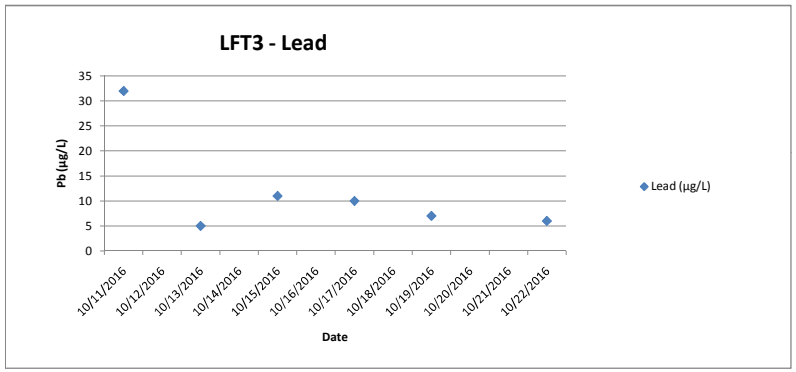

LFT3 - Total Phosphorus
TP (mg/mL-N)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

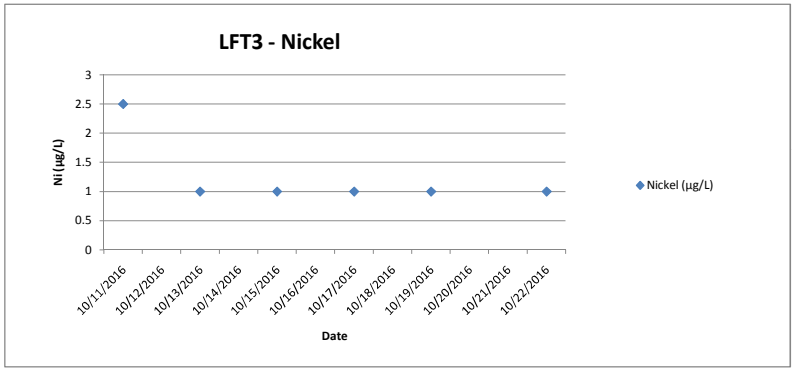

LFT3 - Chromium
Cr (µg/L)
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

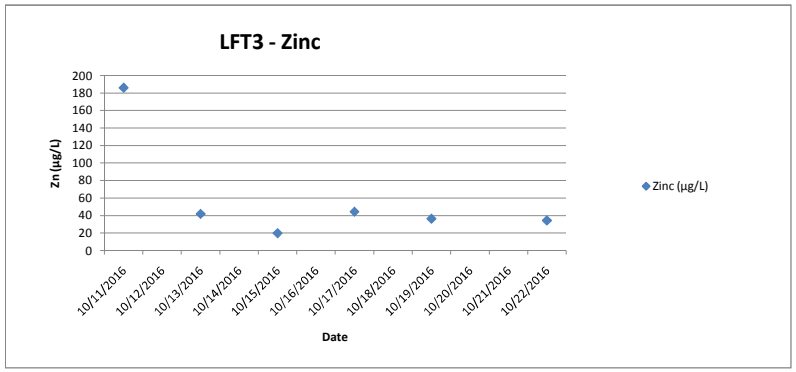

LFT3- Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

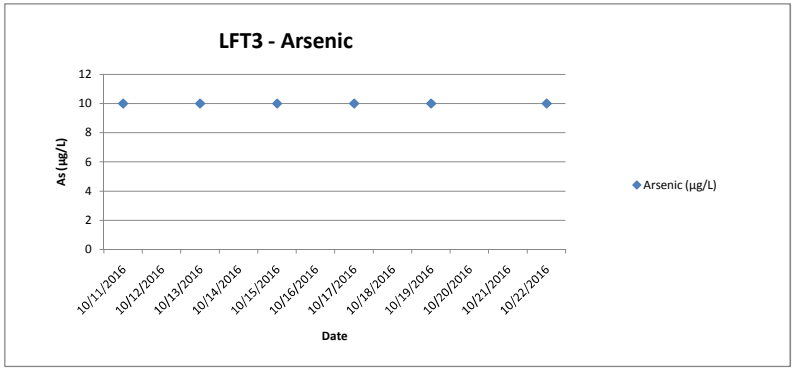

LFT3 - Copper
Cu (µg/L)
90
80
70
60
50
40
30
20
10
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Copper (µg/L)

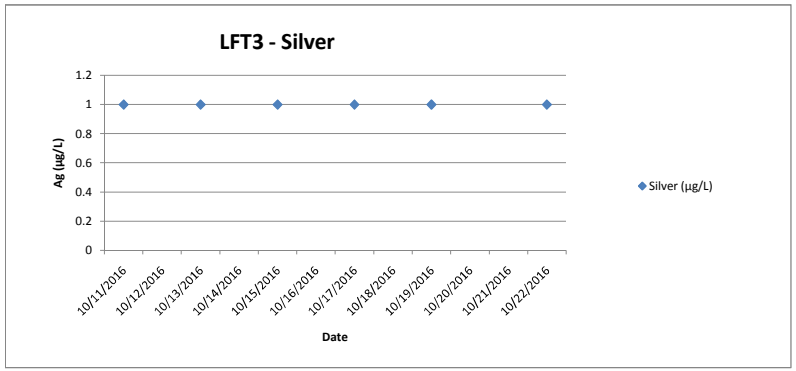

LFT3 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Mercury (µg/L)

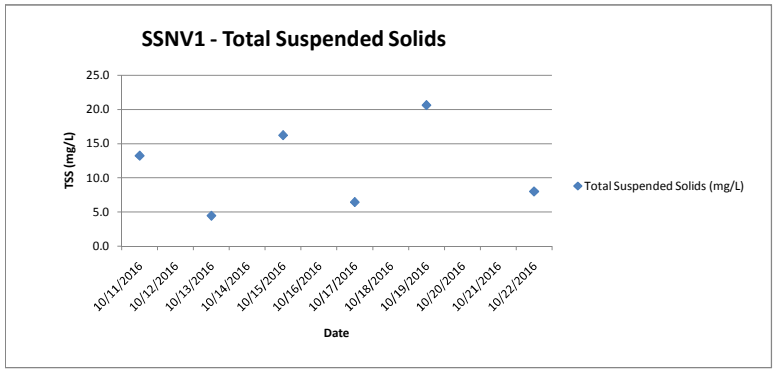

LFT3 - Lead
Pb (µg/L)
35
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Lead (µg/L)

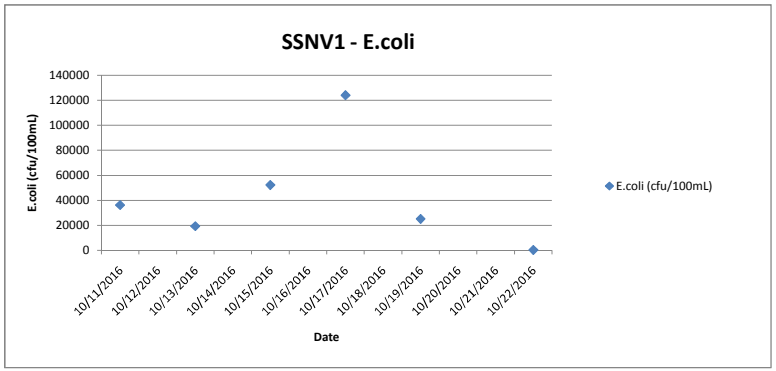

LFT3 - Nickel
Ni (µg/L)
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nickel (µg/L)

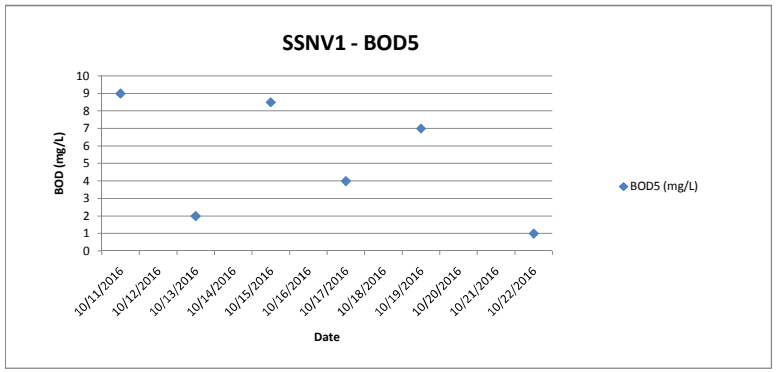

LFT3 - Zinc
Zn (µg/L)
200
180
160
140
120
100
80
60
40
20
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Zinc (µg/L)

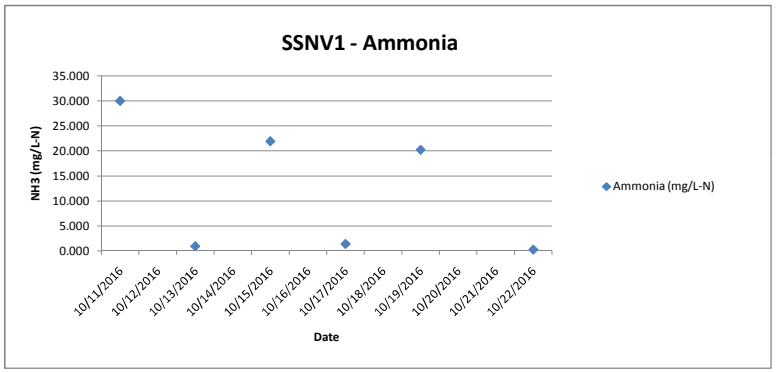

LFT3 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Arsenic (µg/L)

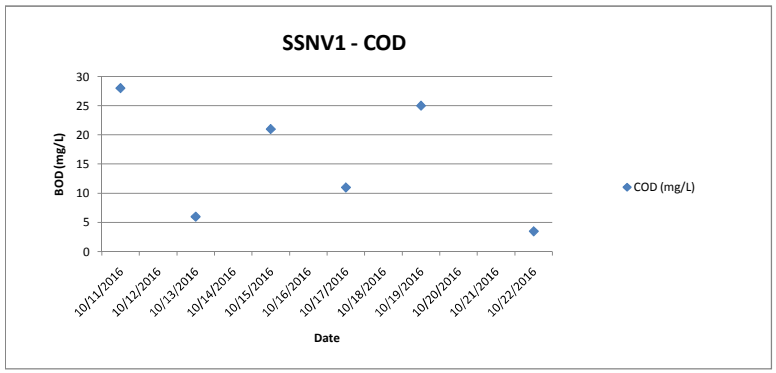

LFT3 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

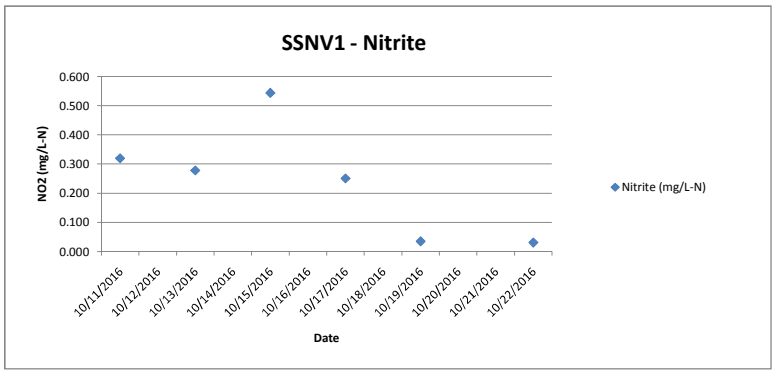

SSNV1 - Total Suspended Solids
TSS (mg/L)
25.0
20.0
15.0
10.0
5.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

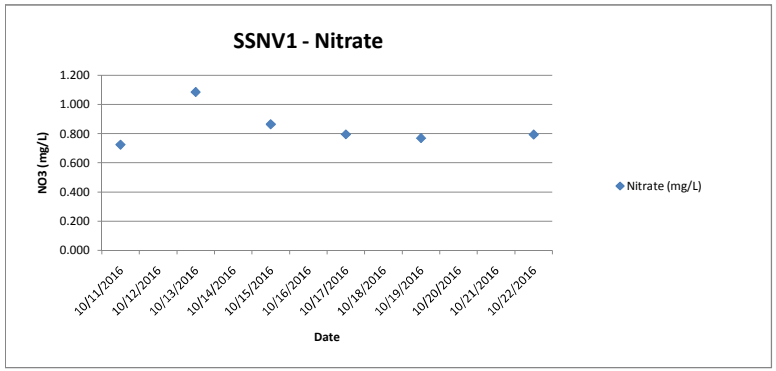

SSNV1 - E.coli
E.coli (cfu/100mL)
140000
120000
100000
80000
60000
40000
20000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

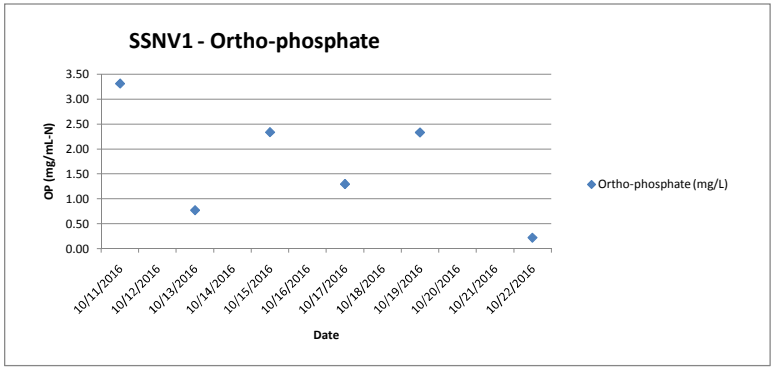

SSNV1 - BOD5
BOD (mg/L)
10
9
8
7
6
5
4
3
2
1
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

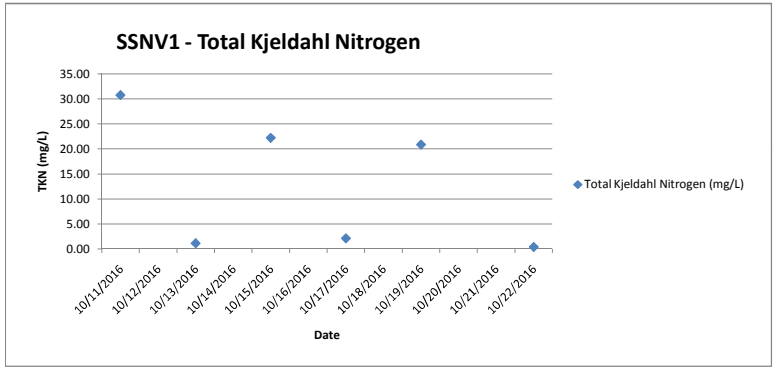

SSNV1 - Ammonia
NH3 (mg/L-N)
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

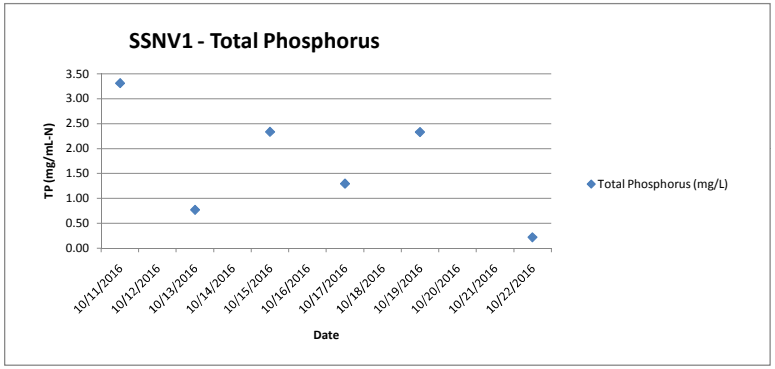

SSNV1 - COD
BOD (mg/L)
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

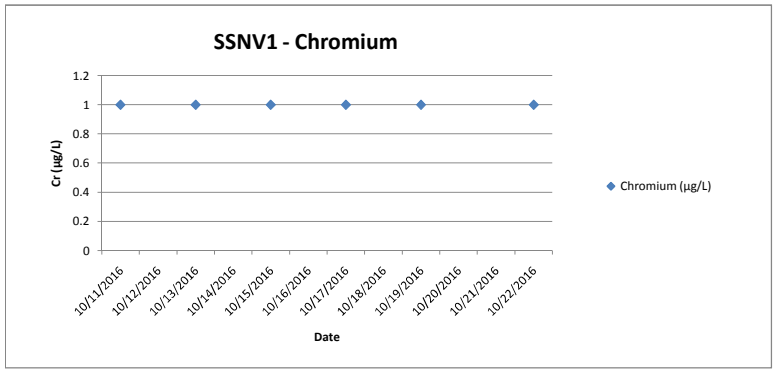

SSNV1 - Nitrite
NO2 (mg/L-N)
0.600
0.500
0.400
0.300
0.200
0.100
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

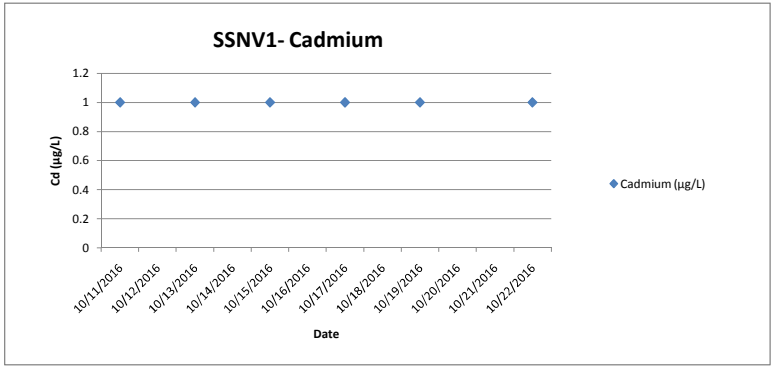

SSNV1 - Nitrate
NO3 (mg/L)
1.200
1.000
0.800
0.600
0.400
0.200
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

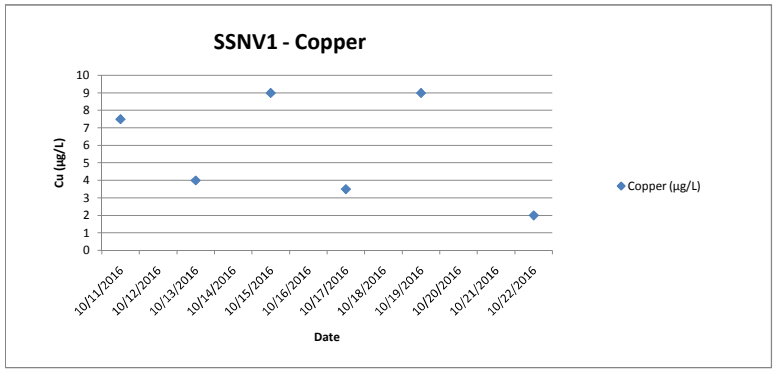

SSNV1 - Ortho-phosphate
OP (mg/mL-N)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

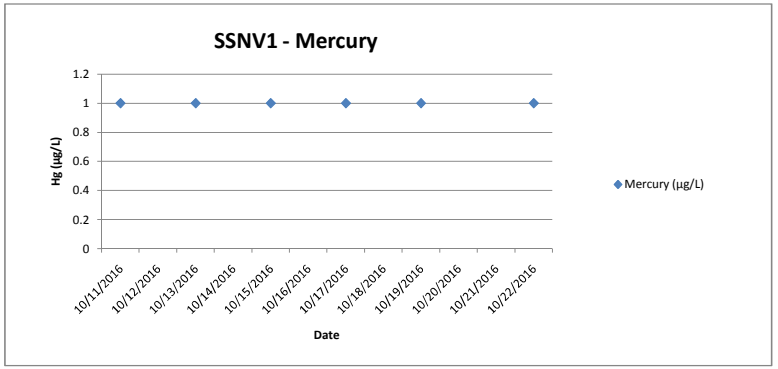

SSNV1 - Total Kjeldahl Nitrogen
TKN (mg/L)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

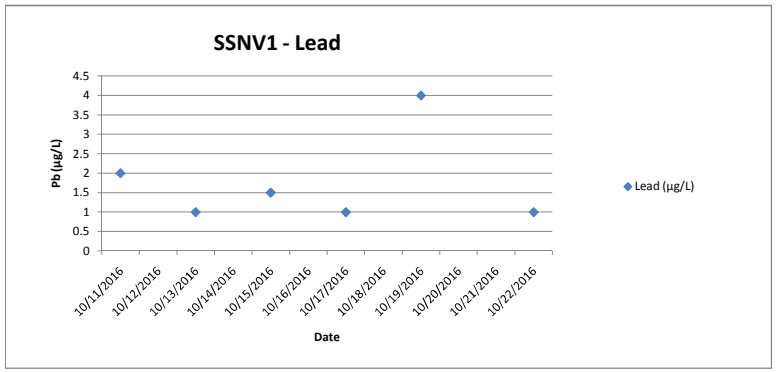

SSNV1 - Total Phosphorus
TP (mg/mL-N)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

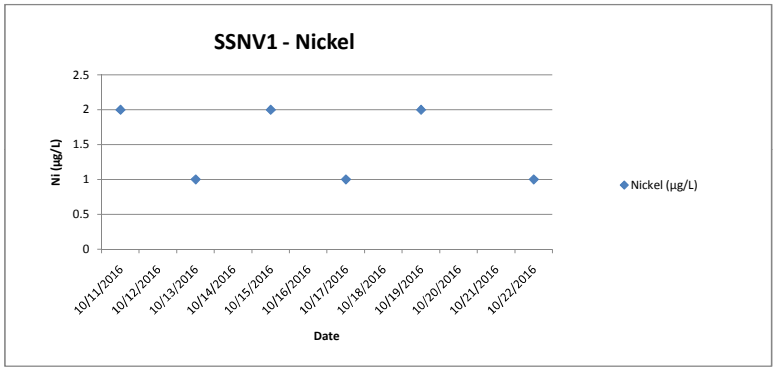

SSNV1 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

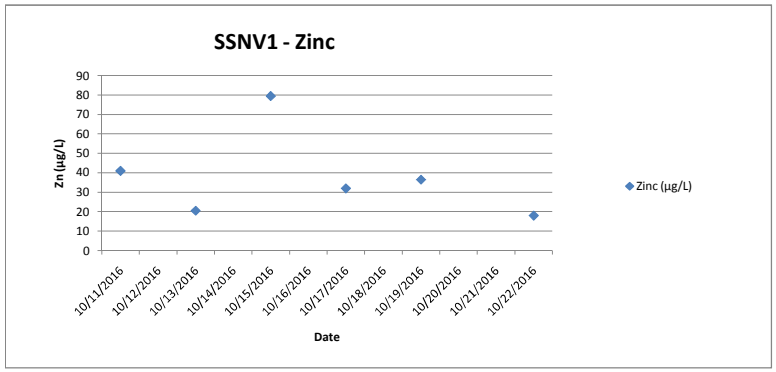

SSNV1- Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

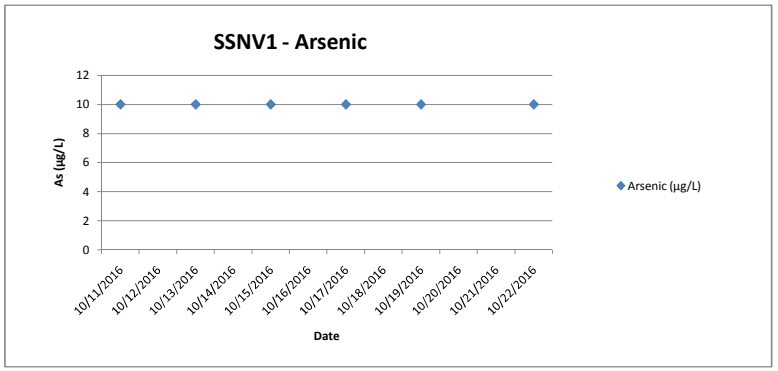

SSNV1 - Copper
Cu (µg/L)
Date
Copper (µg/L)

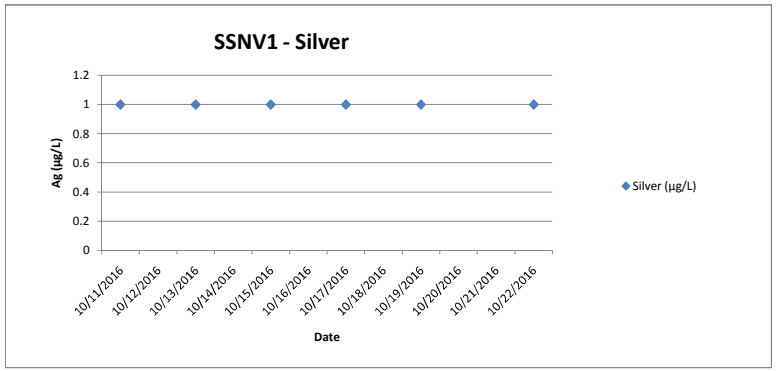

SSNV1 - Mercury
Hg (µg/L)
Date
Mercury (µg/L)

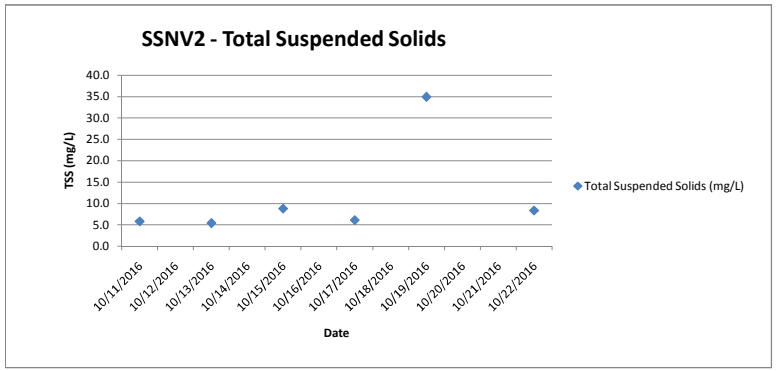

SSNV1 - Lead
Pb (µg/L)
Date
Lead (µg/L)

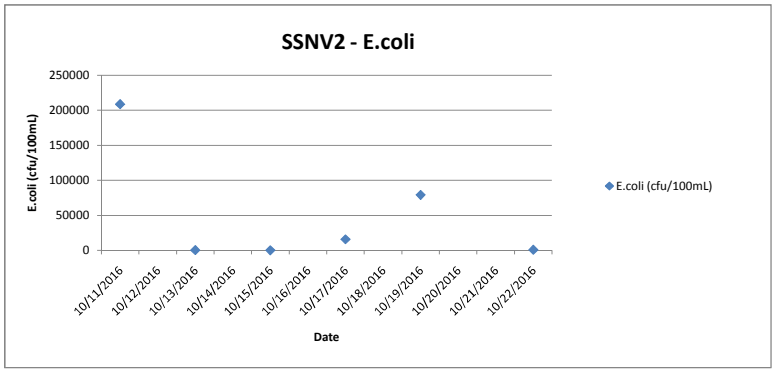

SSNV1 - Nickel
Ni (µg/L)
Date
Nickel (µg/L)

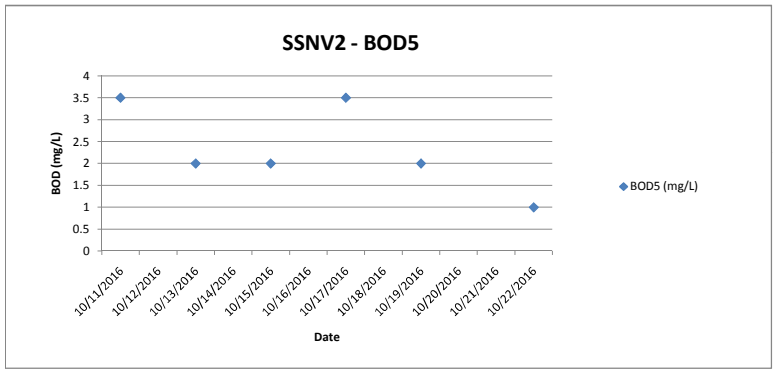

SSNV1 - Zinc
Zn (µg/L)
Date
Zinc (µg/L)

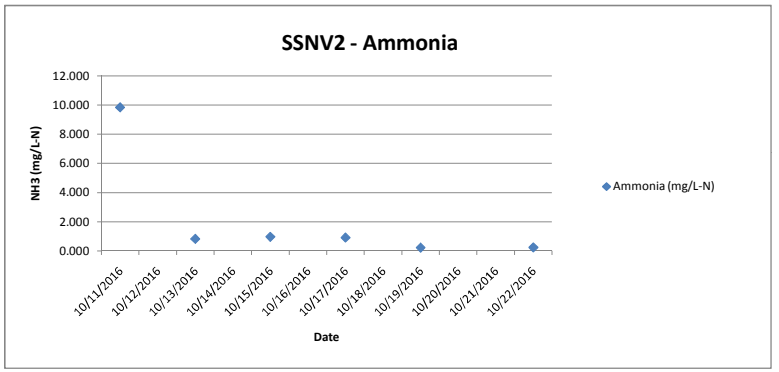

SSNV1 - Arsenic
As (µg/L)
Date
Arsenic (µg/L)

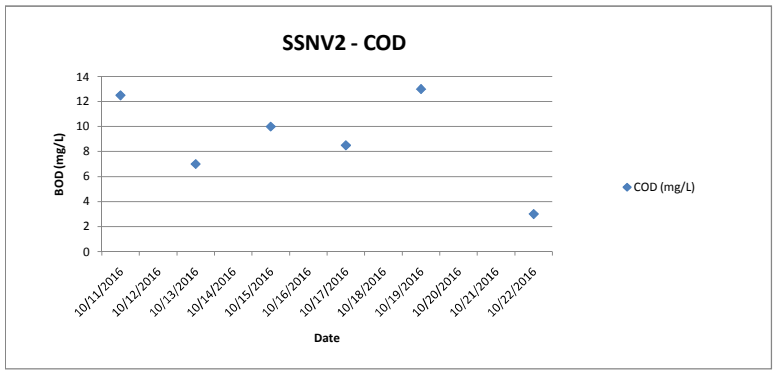

SSNV1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

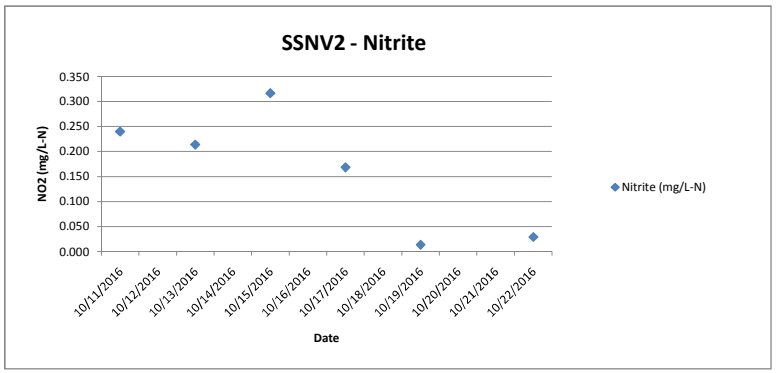

SSNV2 - Total Suspended Solids
TSS (mg/L)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

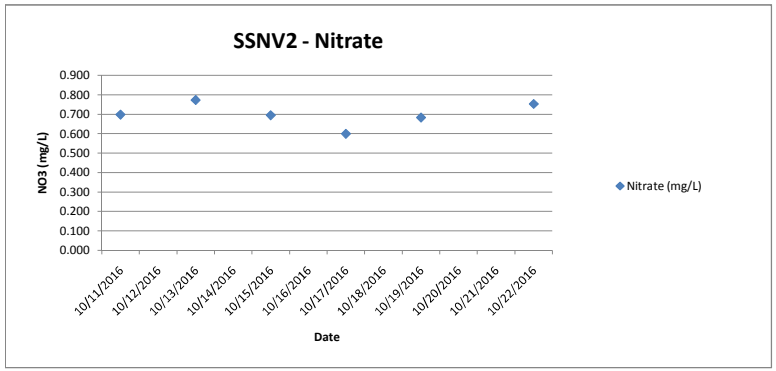

SSNV2 - E.coli
E.coli (cfu/100mL)
250000
200000
150000
100000
50000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

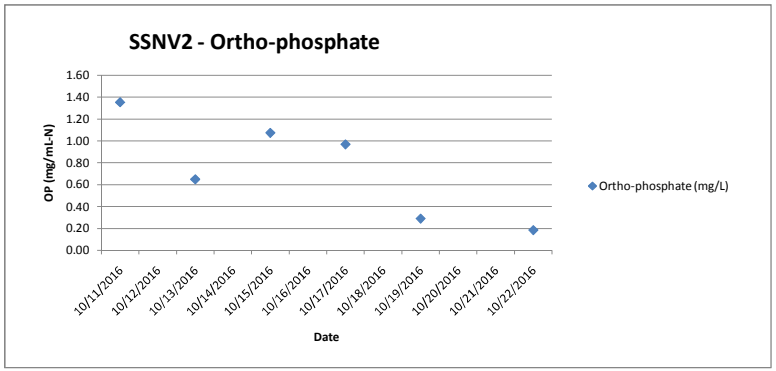

SSNV2 - BOD5
BOD (mg/L)
4
3.5
3
2.5
2
1.5
1
0.5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

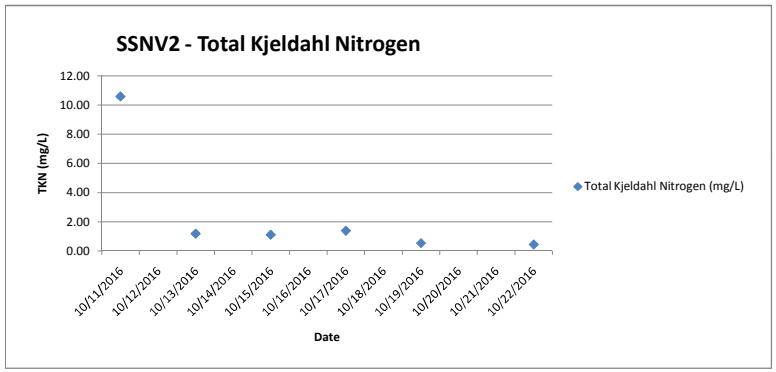

SSNV2 - Ammonia
NH3 (mg/L-N)
12.000
10.000
8.000
6.000
4.000
2.000
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

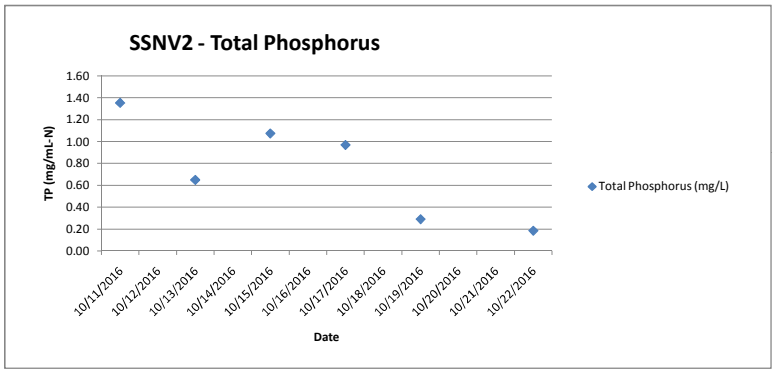

SSNV2 - COD
BOD (mg/L)
14
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

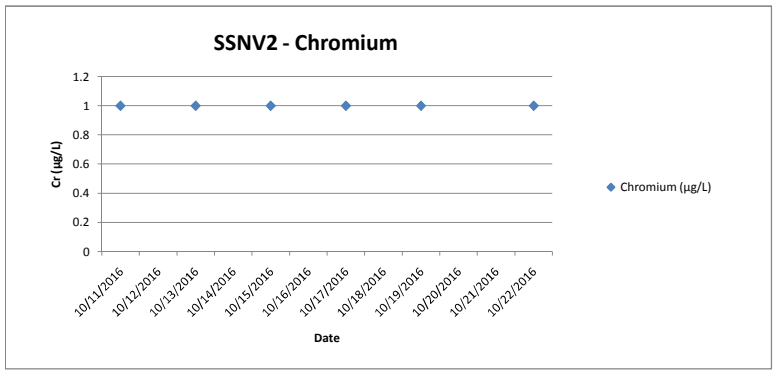

SSNV2 - Nitrite
NO2 (mg/L-N)
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

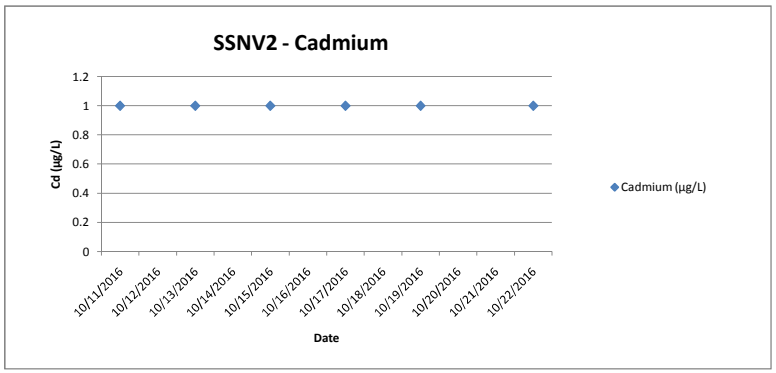

SSNV2 - Nitrate
NO3 (mg/L)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

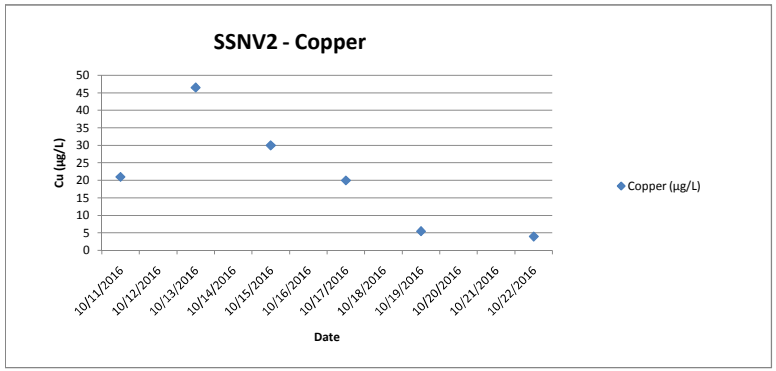

SSNV2 - Ortho-phosphate
OP (mg/mL-N)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

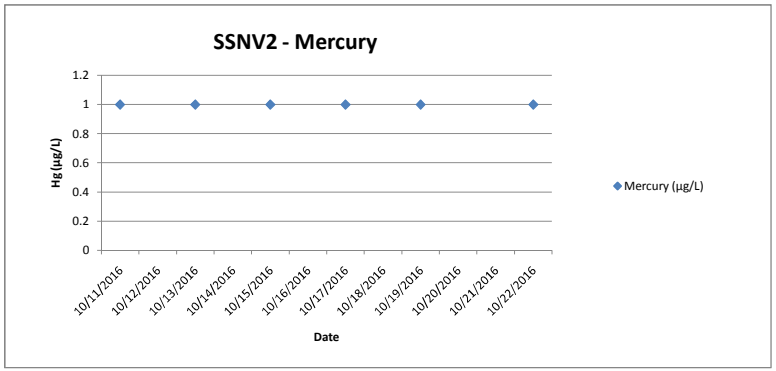

SSNV2 - Total Kjeldahl Nitrogen
TKN (mg/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

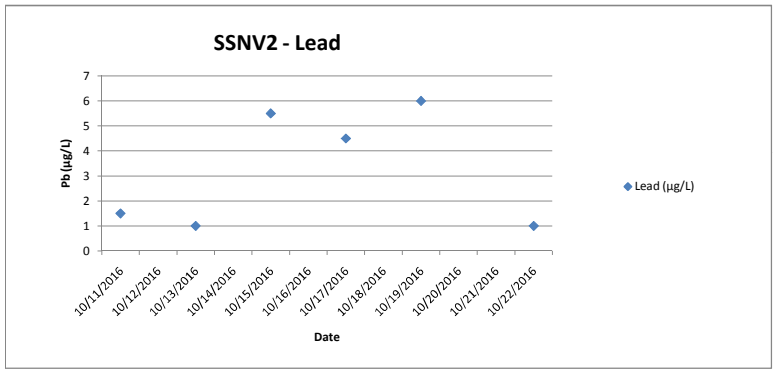

SSNV2 - Total Phosphorus
TP (mg/mL-N)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

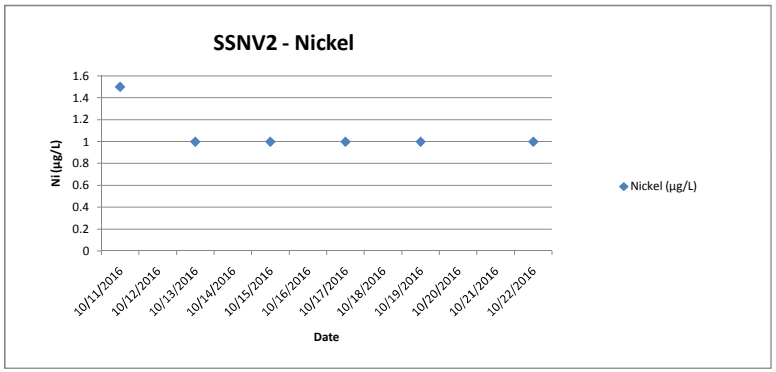

SSNV2 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

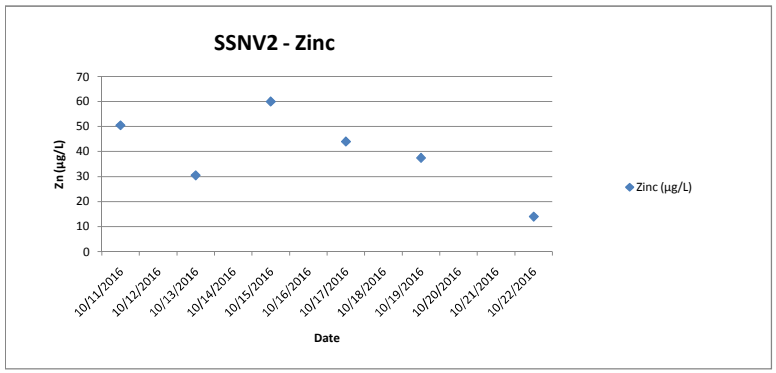

SSNV2 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

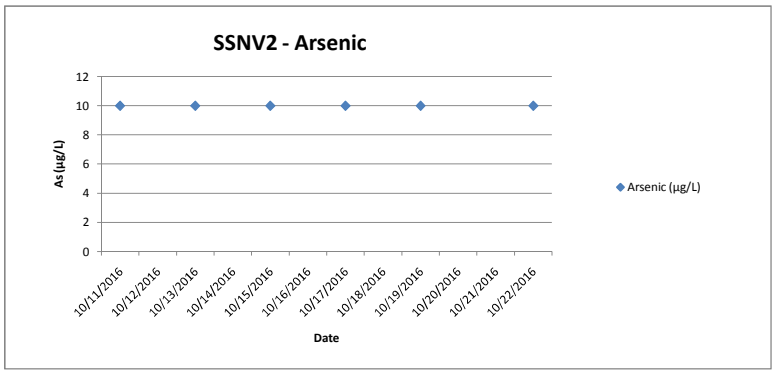

SSNV2 - Copper
Cu (µg/L)
50
45
40
35
30
25
20
15
10
5
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Copper (µg/L)

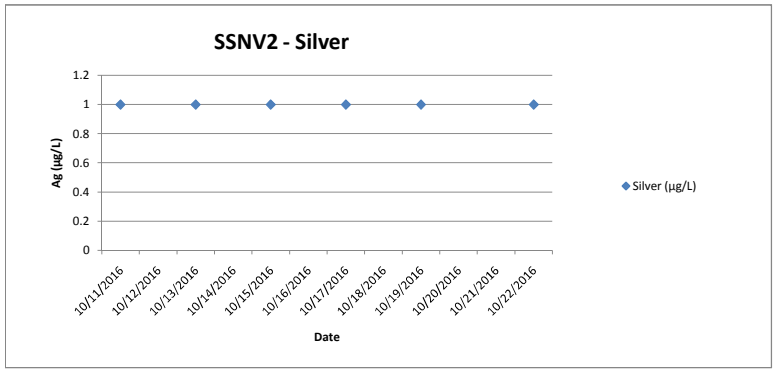

SSNV2 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Mercury (µg/L)

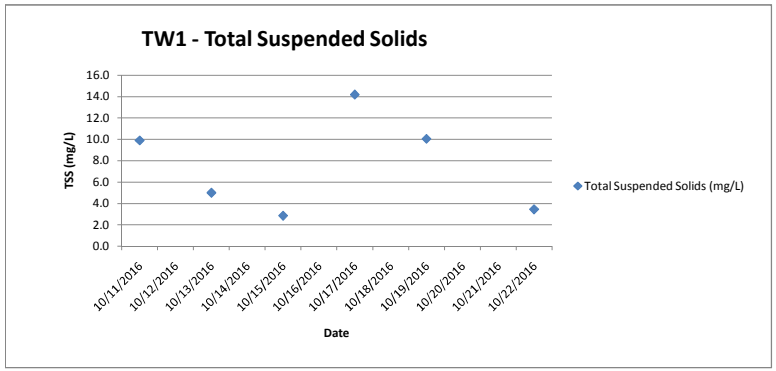

SSNV2 - Lead
Pb (µg/L)
7
6
5
4
3
2
1
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Lead (µg/L)

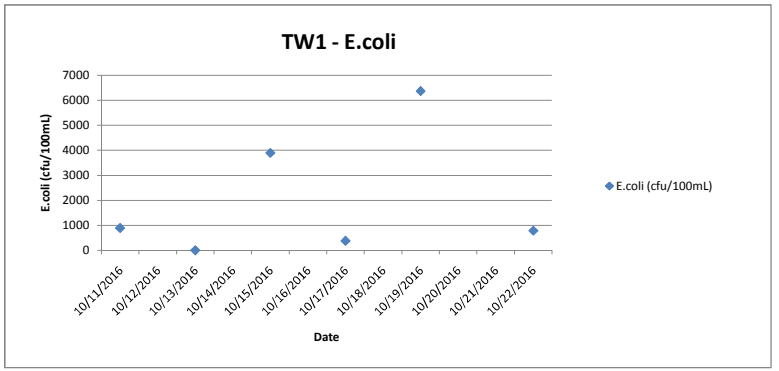

SSNV2 - Nickel
Ni (µg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nickel (µg/L)

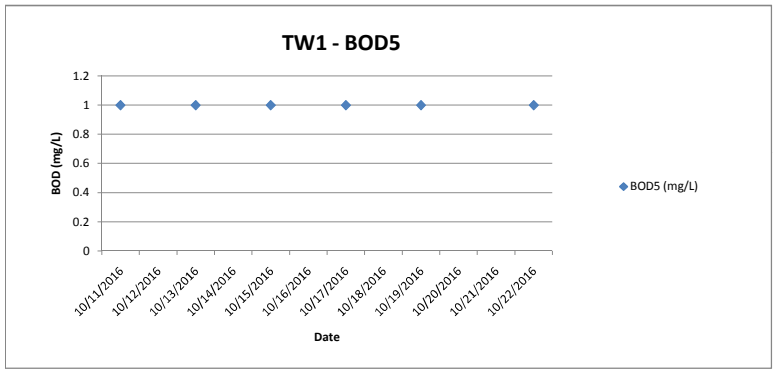

SSNV2 - Zinc
Zn (µg/L)
70
60
50
40
30
20
10
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Zinc (µg/L)

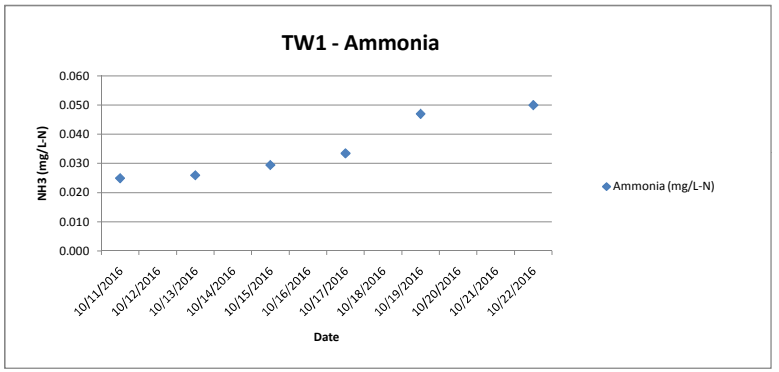

SSNV2 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Arsenic (µg/L)

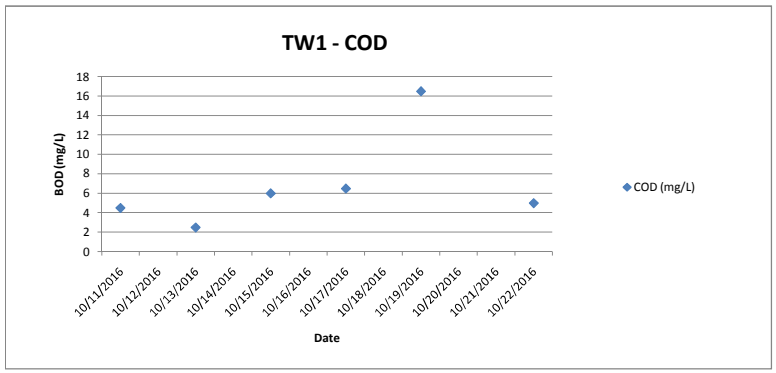

SSNV2 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

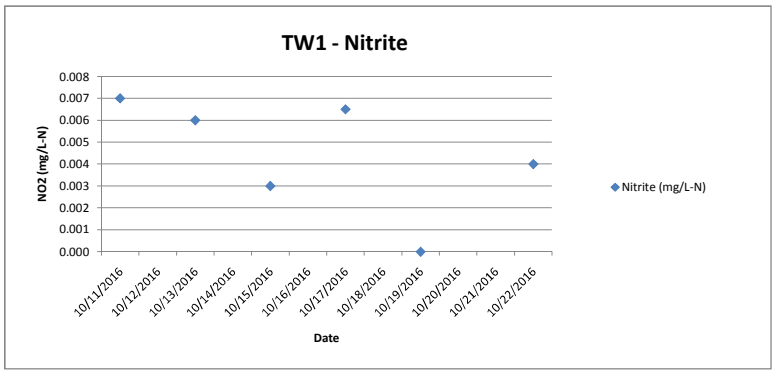

TW1 - Total Suspended Solids
TSS (mg/L)
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Suspended Solids (mg/L)

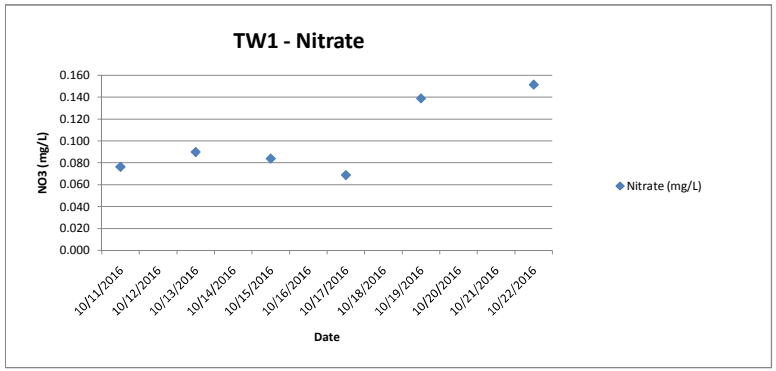

TW1 - E.coli
E.coli (cfu/100mL)
7000
6000
5000
4000
3000
2000
1000
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
E.coli (cfu/100mL)

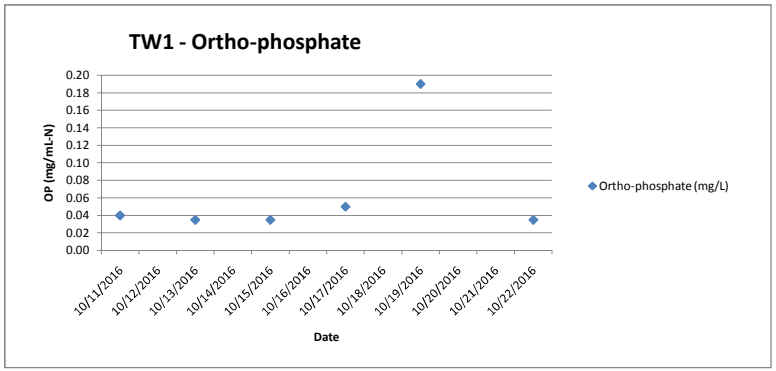

TW1 - BOD5
BOD (mg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
BOD5 (mg/L)

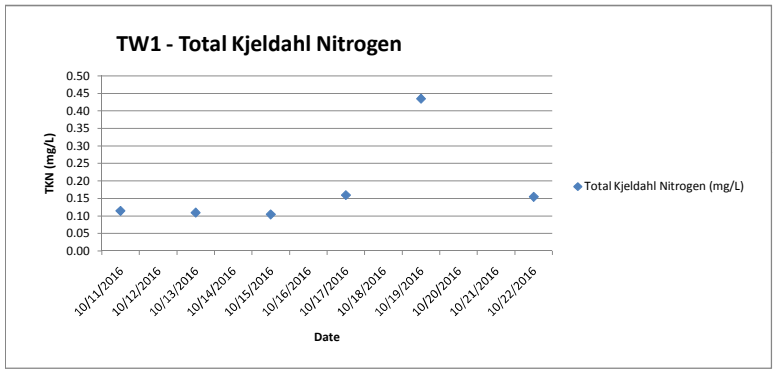

TW1 - Ammonia
NH3 (mg/L-N)
0.060
0.050
0.040
0.030
0.020
0.010
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ammonia (mg/L-N)

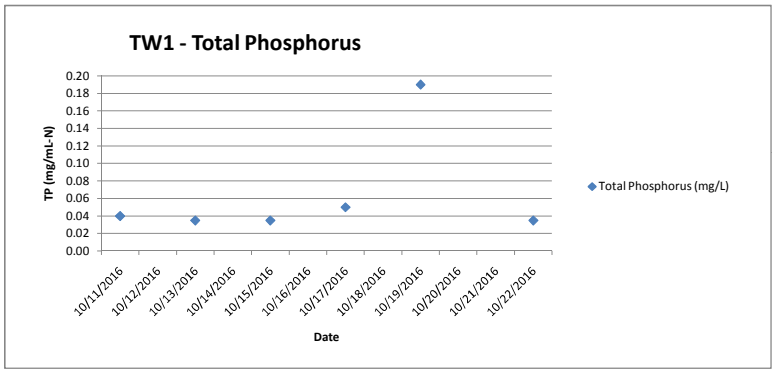

TW1 - COD
BOD (mg/L)
18
16
14
12
10
8
6
4
2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
COD (mg/L)

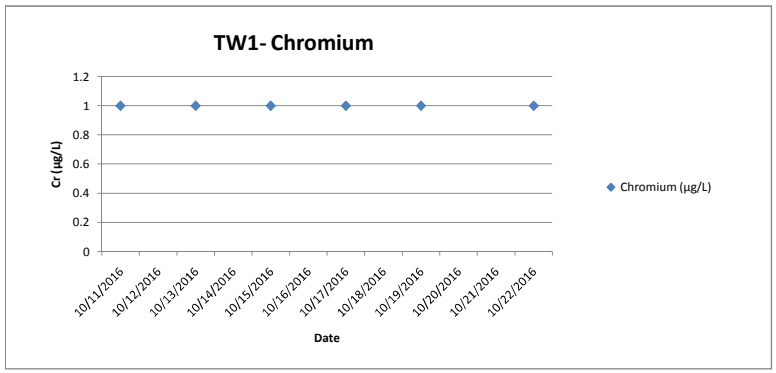

TW1 - Nitrite
NO2 (mg/L-N)
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrite (mg/L-N)

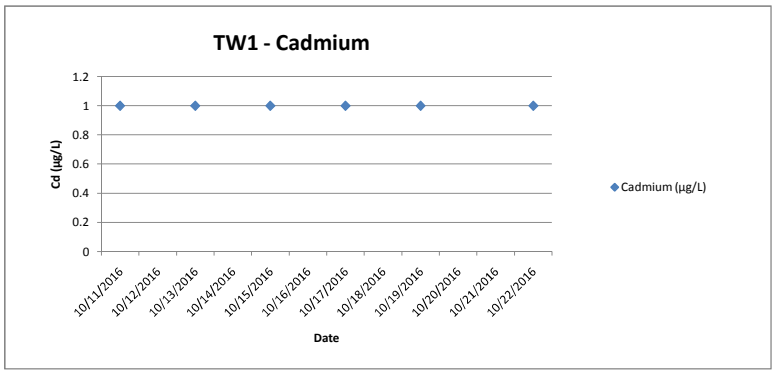

TW1 - Nitrate
NO3 (mg/L)
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Nitrate (mg/L)

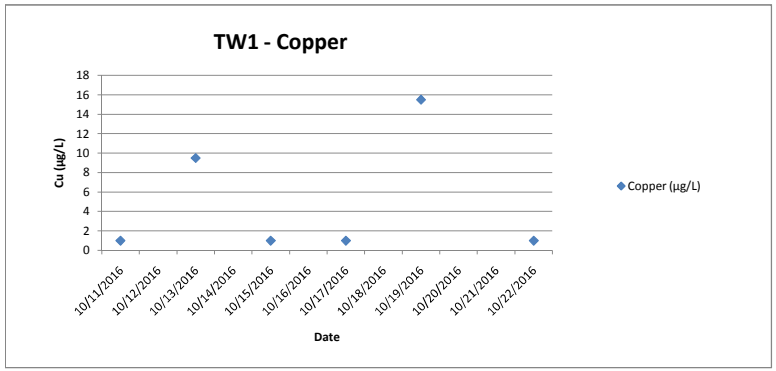

TW1 - Ortho-phosphate
OP (mg/mL-N)
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Ortho-phosphate (mg/L)

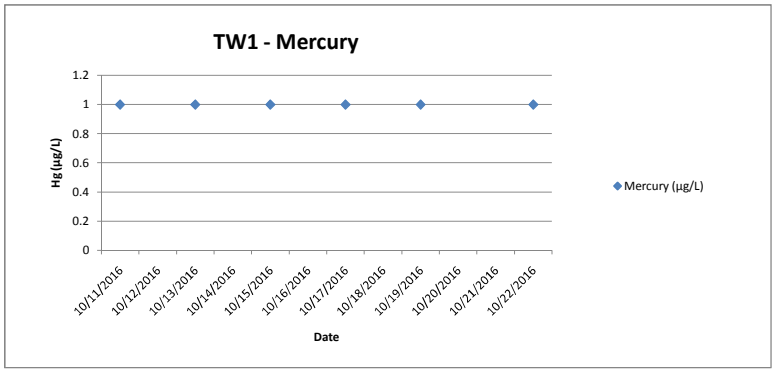

TW1 - Total Kjeldahl Nitrogen
TKN (mg/L)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Kjeldahl Nitrogen (mg/L)

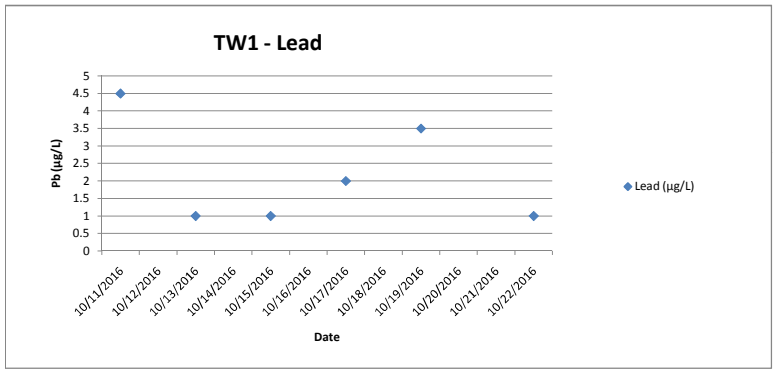

TW1 - Total Phosphorus
TP (mg/mL-N)
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Total Phosphorus (mg/L)

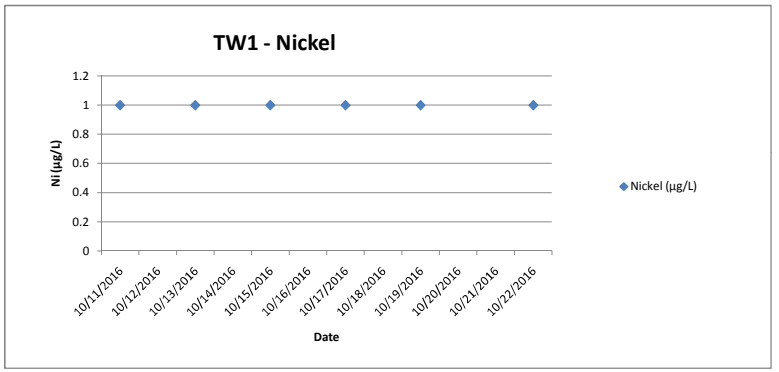

TW1- Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Chromium (µg/L)

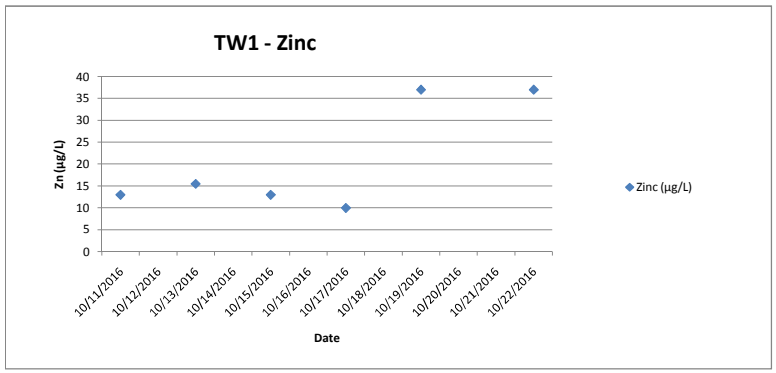

TW1 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Cadmium (µg/L)

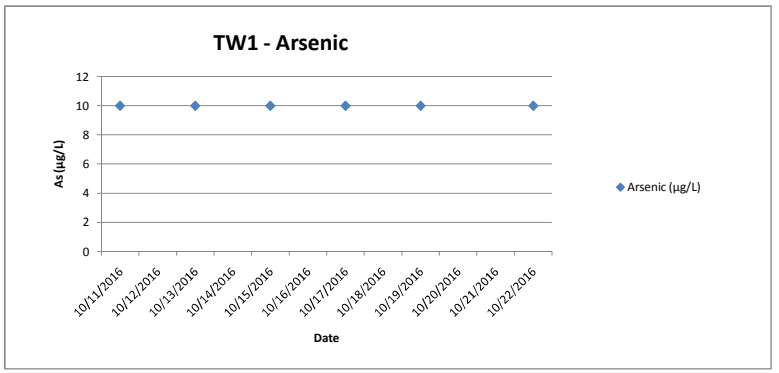

TW1 - Copper
Cu (µg/L)
Date
Copper (µg/L)

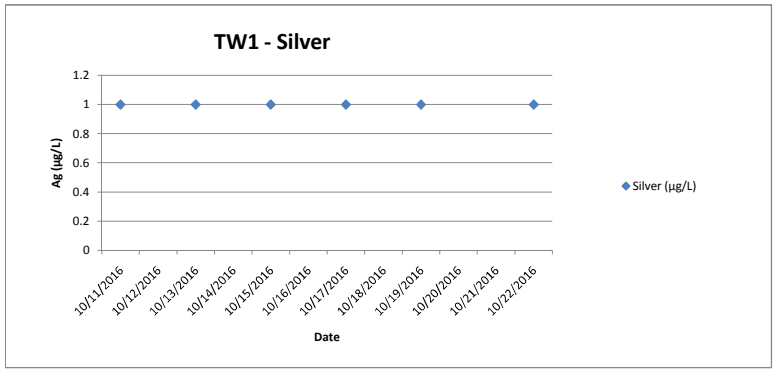

TW1 - Mercury
Hg (µg/L)
Date
Mercury (µg/L)

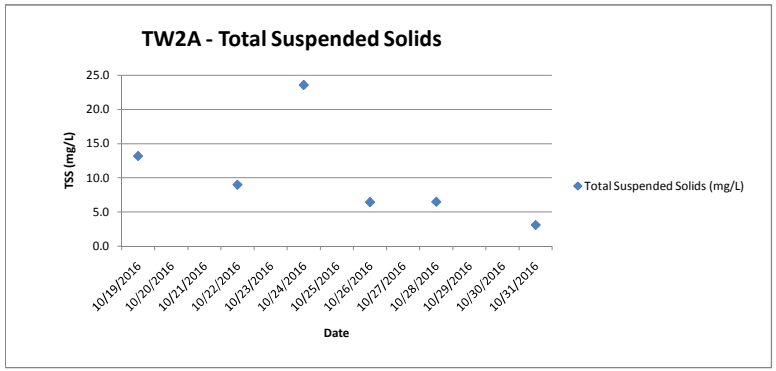

TW1 - Lead
Pb (µg/L)
Date
Lead (µg/L)

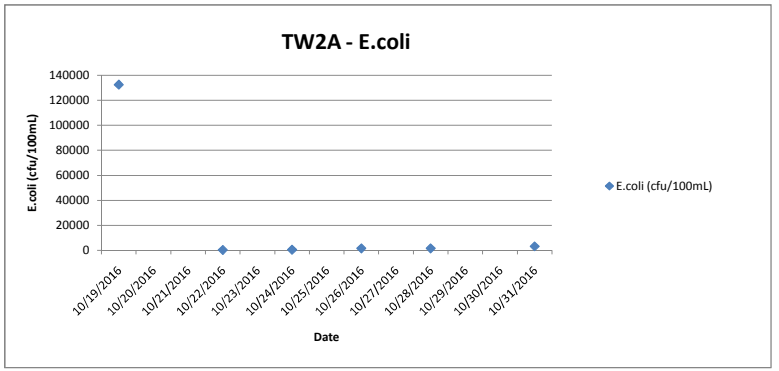

TW1 - Nickel
Ni (µg/L)
Date
Nickel (µg/L)

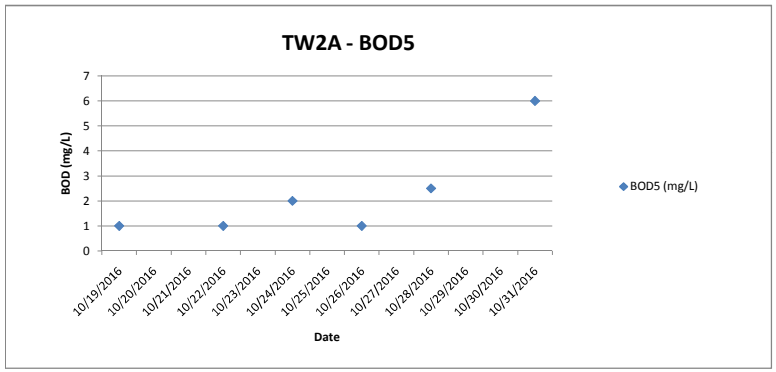

TW1 - Zinc
Zn (µg/L)
Date
Zinc (µg/L)

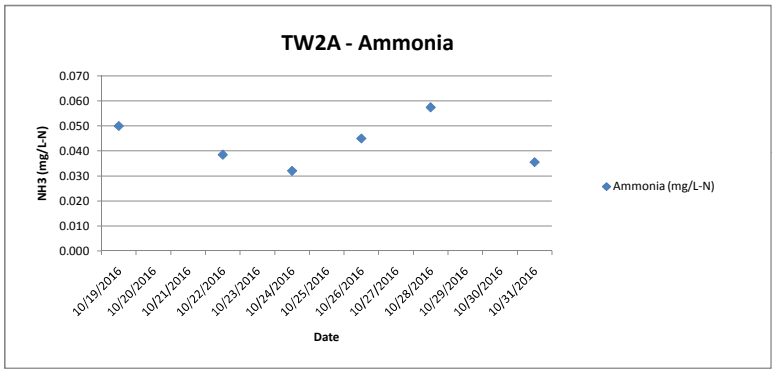

TW1 - Arsenic
As (µg/L)
Date
Arsenic (µg/L)

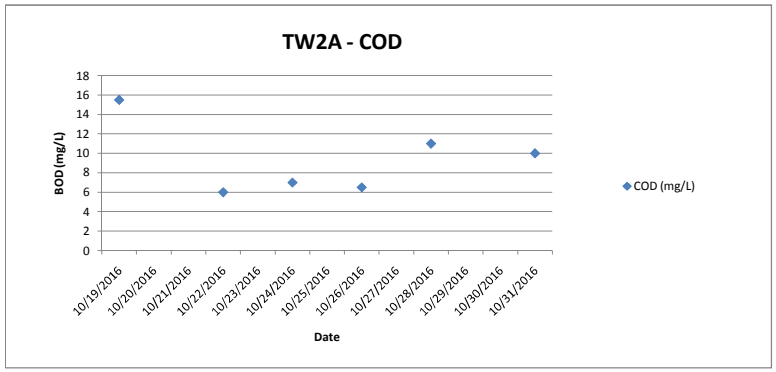

TW1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
Date
Silver (µg/L)

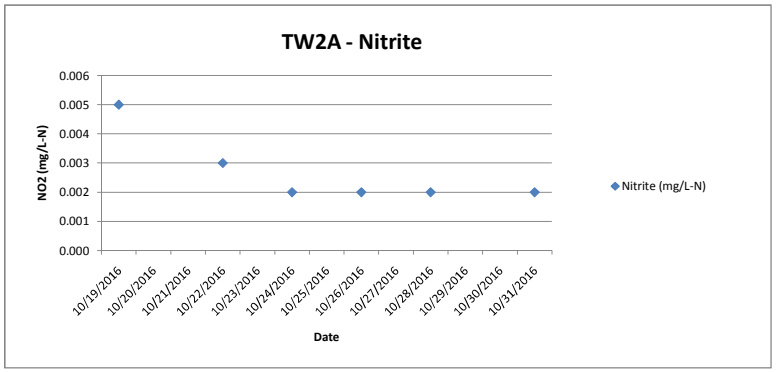

TW2A - Total Suspended Solids
TSS (mg/L)
25.0
20.0
15.0
10.0
5.0
0.0
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Total Suspended Solids (mg/L)

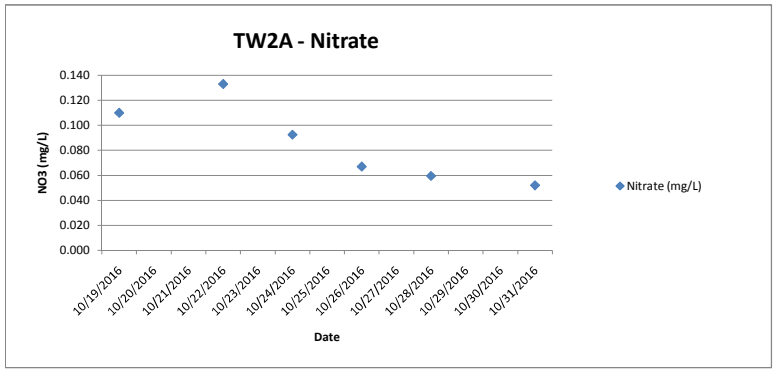

TW2A - E.coli
E.coli (cfu/100mL)
140000
120000
100000
80000
60000
40000
20000
0
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
E.coli (cfu/100mL)

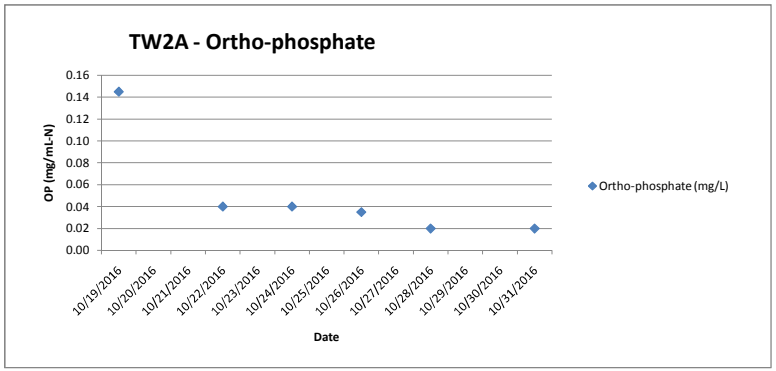

TW2A - BOD5
BOD (mg/L)
7
6
5
4
3
2
1
0
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
BOD5 (mg/L)

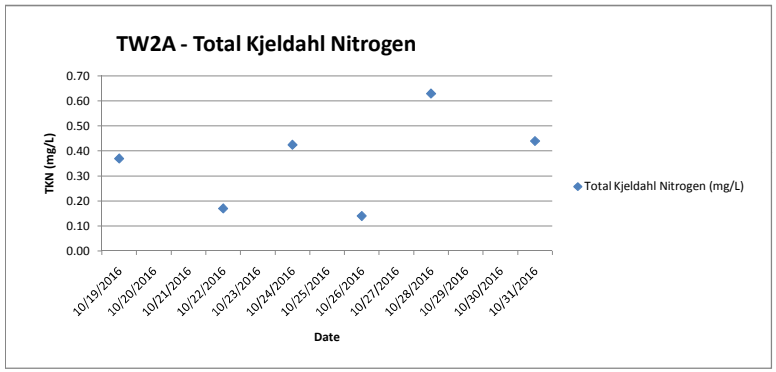

TW2A - Ammonia
NH3 (mg/L-N)
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Ammonia (mg/L-N)

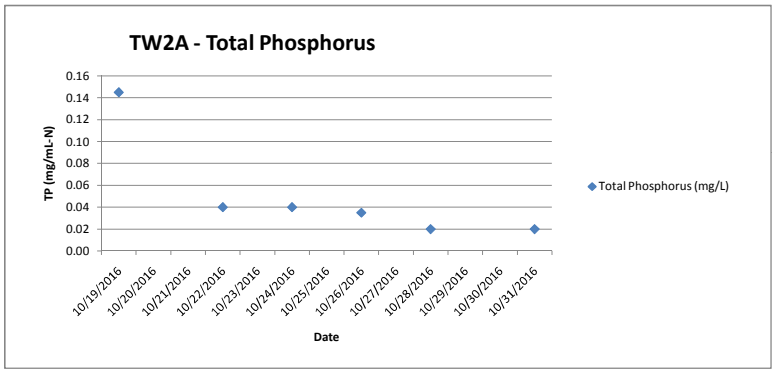

TW2A - COD
BOD (mg/L)
18
16
14
12
10
8
6
4
2
0
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
COD (mg/L)

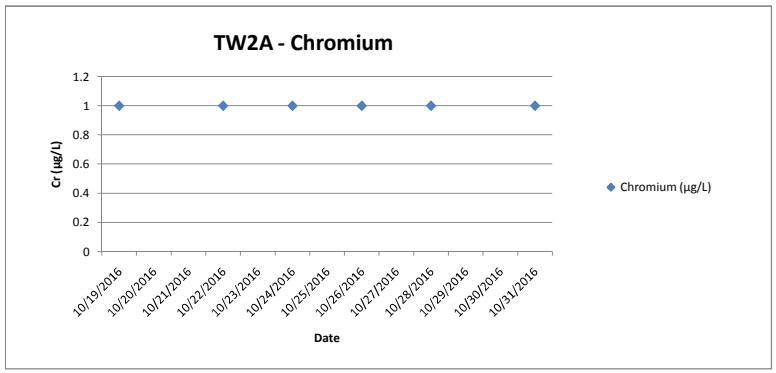

TW2A - Nitrite
NO2 (mg/L-N)
0.006
0.005
0.004
0.003
0.002
0.001
0.000
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Nitrite (mg/L-N)

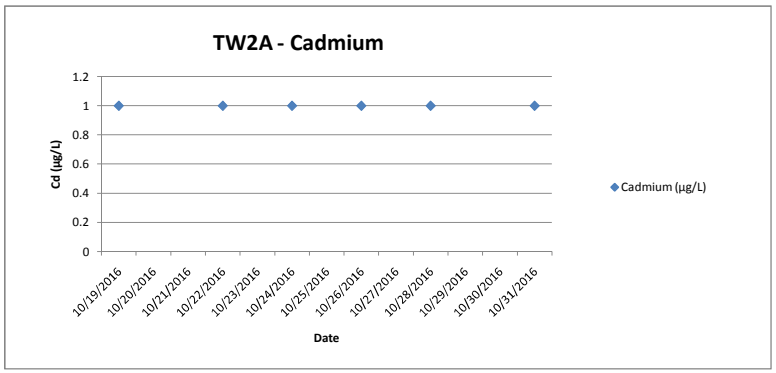

TW2A - Nitrate
NO3 (mg/L)
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Nitrate (mg/L)

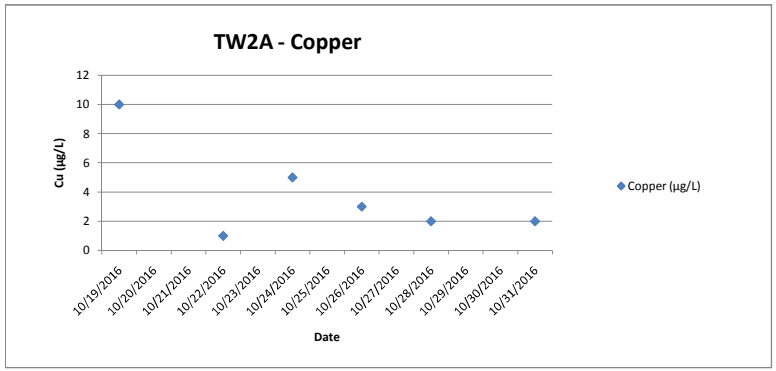

TW2A - Ortho-phosphate
OP (mg/mL-N)
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Ortho-phosphate (mg/L)

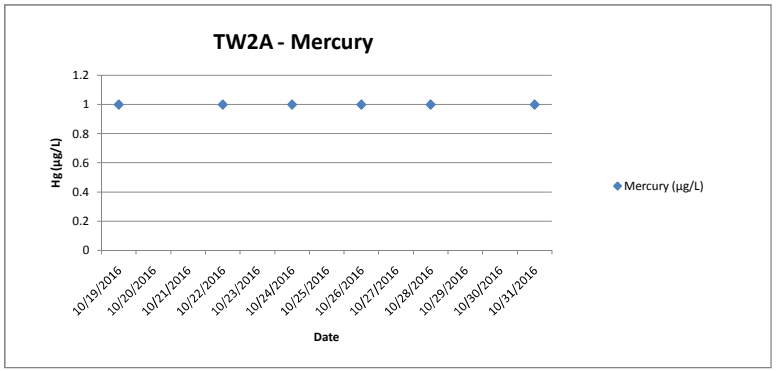

TW2A - Total Kjeldahl Nitrogen
TKN (mg/L)
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Total Kjeldahl Nitrogen (mg/L)

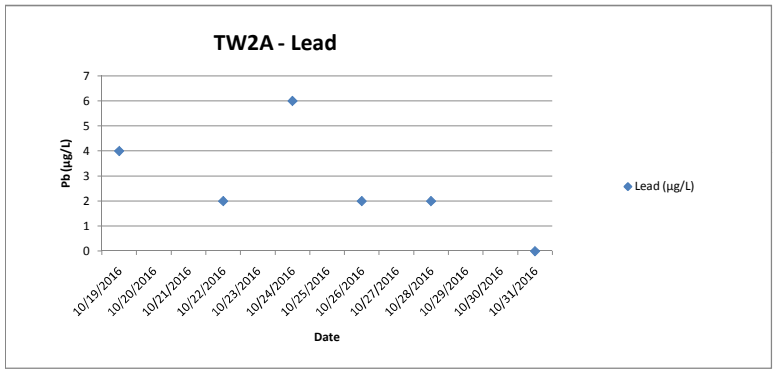

TW2A - Total Phosphorus
TP (mg/mL-N)
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Total Phosphorus (mg/L)

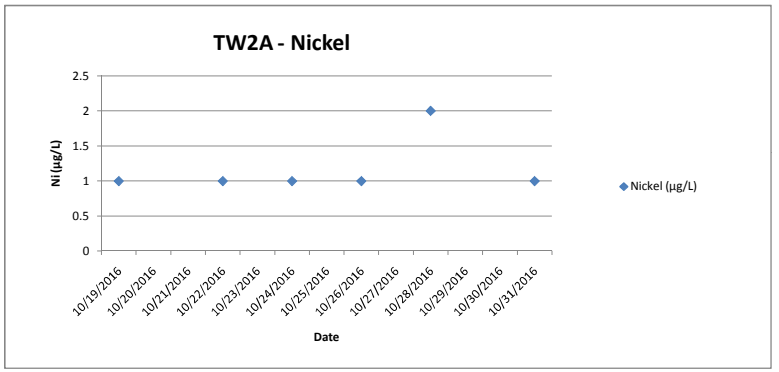

TW2A - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Chromium (µg/L)

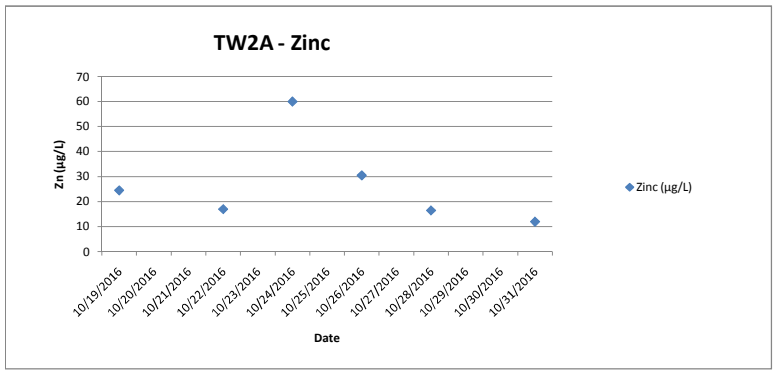

TW2A - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Cadmium (µg/L)

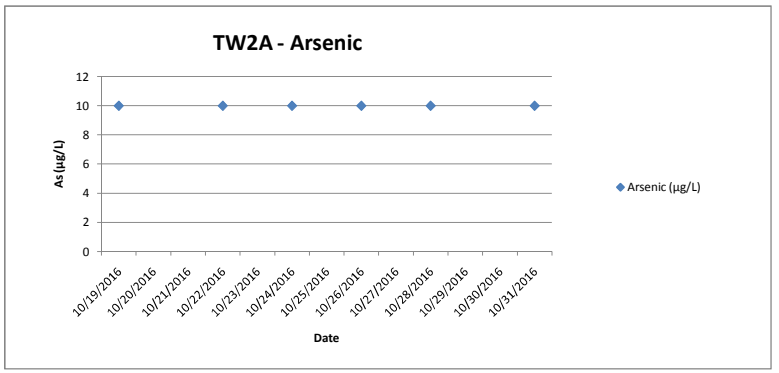

TW2A - Copper
Cu (µg/L)
0
2
4
6
8
10
12
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Copper (µg/L)

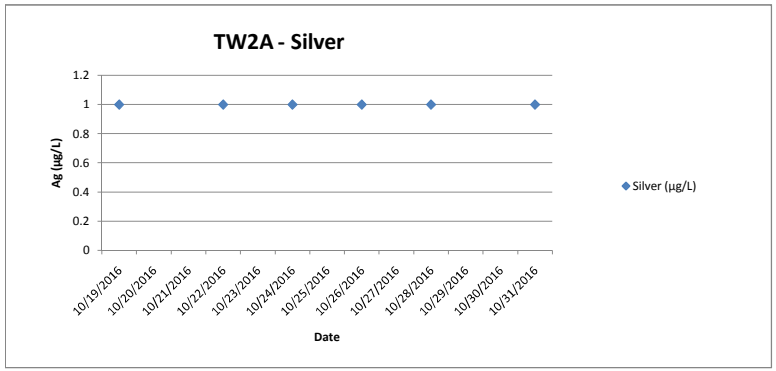

TW2A - Mercury
Hg (µg/L)
0
0.2
0.4
0.6
0.8
1
1.2
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Mercury (µg/L)


TW2A - Lead
Pb (µg/L)
0
1
2
3
4
5
6
7
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Lead (µg/L)


TW2A - Nickel
Ni (µg/L)
0
0.5
1
1.5
2
2.5
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Nickel (µg/L)


TW2A - Zinc
Zn (µg/L)
0
10
20
30
40
50
60
70
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Zinc (µg/L)


TW2A - Arsenic
As (µg/L)
0
2
4
6
8
10
12
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Arsenic (µg/L)


TW2A - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
Silver (µg/L)

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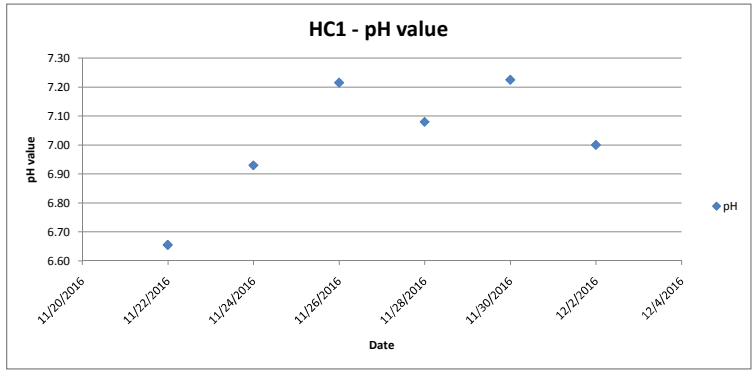
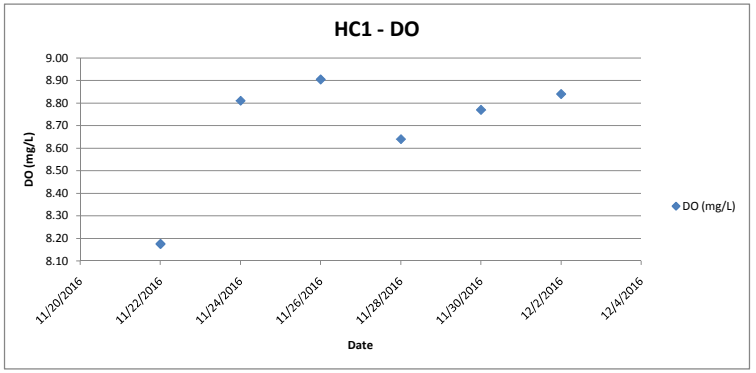
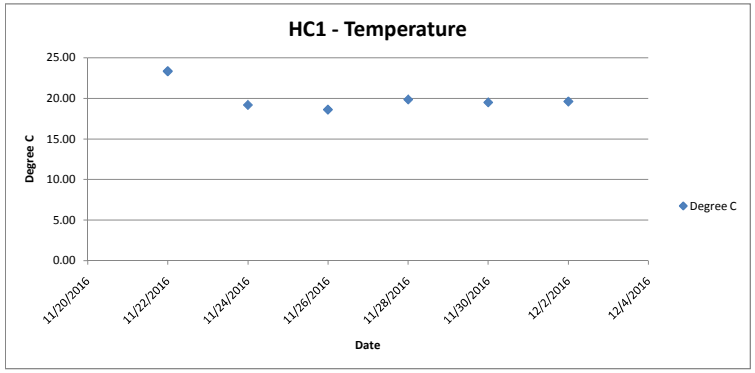
Fax : (852)-24508032
Email : mcl@fugro.com.hk

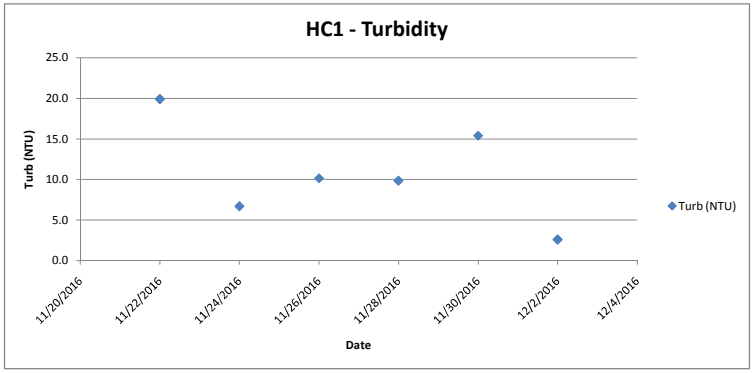
MaterialLab

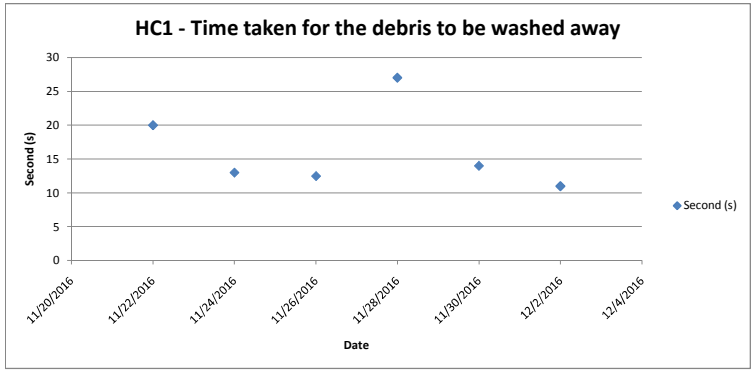
Dry Season

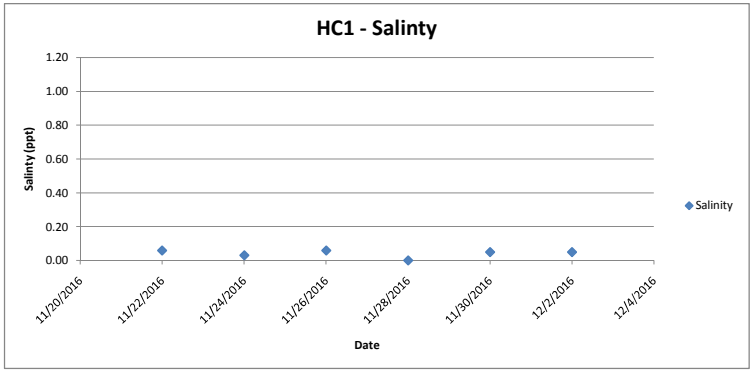

HC1 - pH value
pH value
7.30
7.20
7.10
7.00
6.90
6.80
6.70
6.60
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

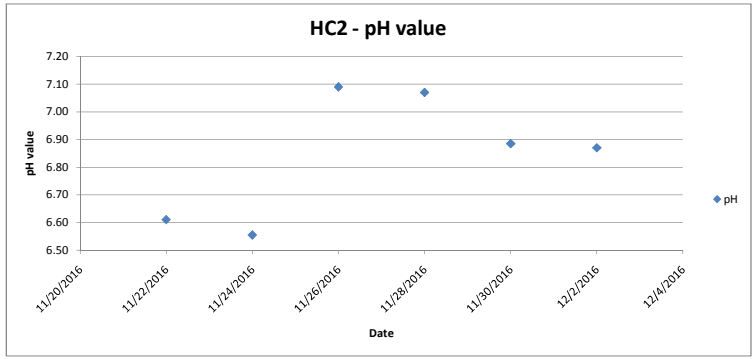

HC1 - DO
DO (mg/L)
9.00
8.90
8.80
8.70
8.60
8.50
8.40
8.30
8.20
8.10
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

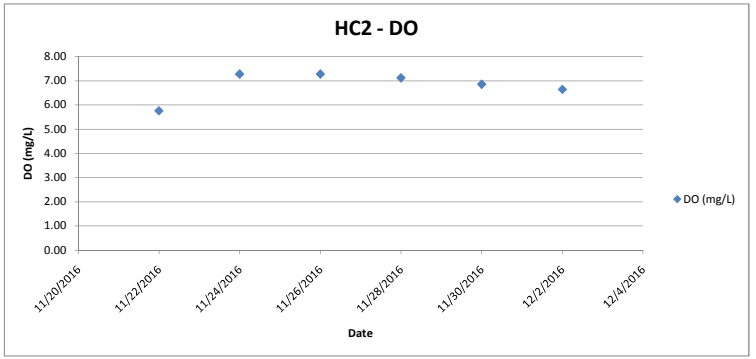

HC1 - Temperature
Degree C
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

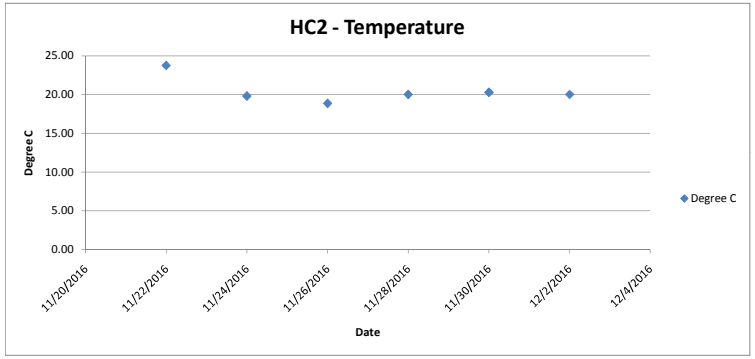

HC1 - Turbidity
Turb (NTU)
25.0
20.0
15.0
10.0
5.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

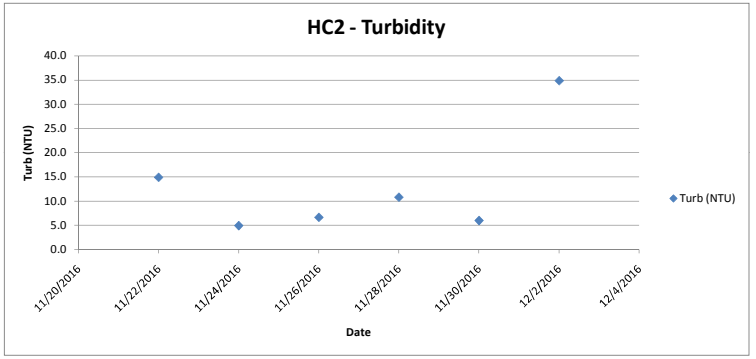

HC1 - Time taken for the debris to be washed away
Second (s)
30
25
20
15
10
5
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Second (s)

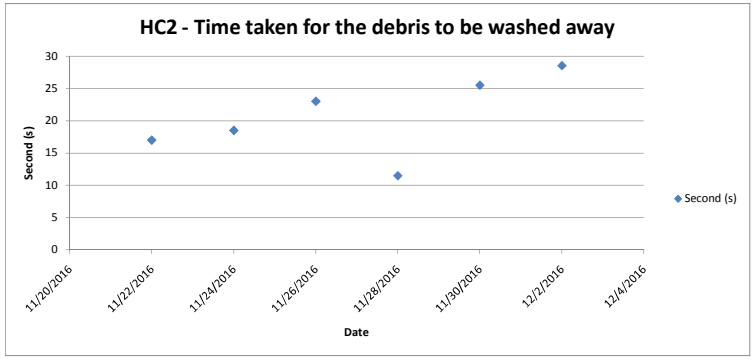

HC1 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

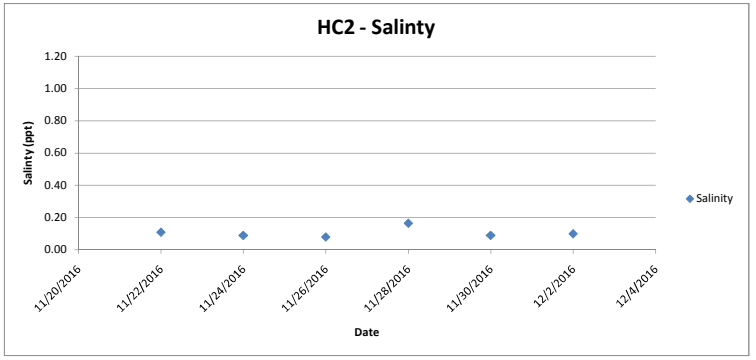

HC2 - pH value
pH value
7.20
7.10
7.00
6.90
6.80
6.70
6.60
6.50
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

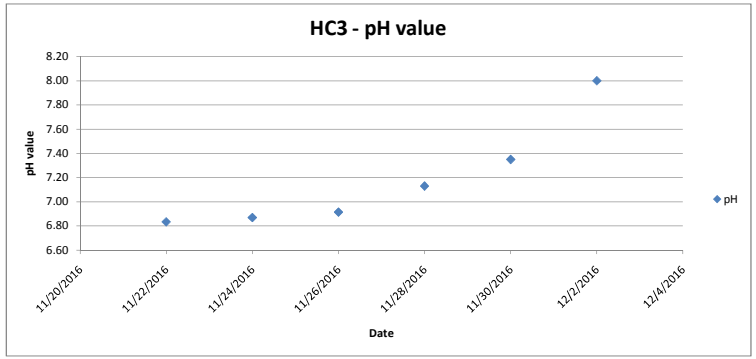

HC2 - DO
DO (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

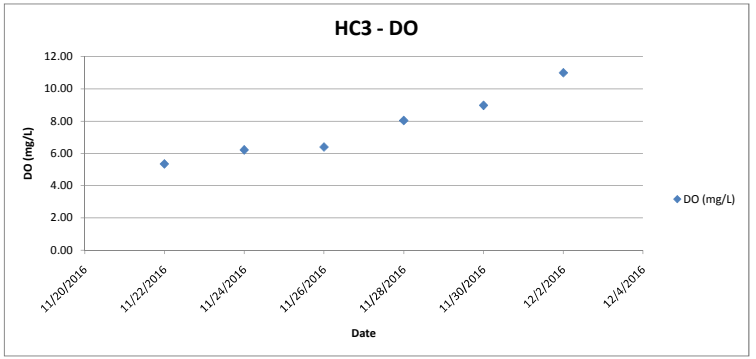

HC2 - Temperature
Degree C
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

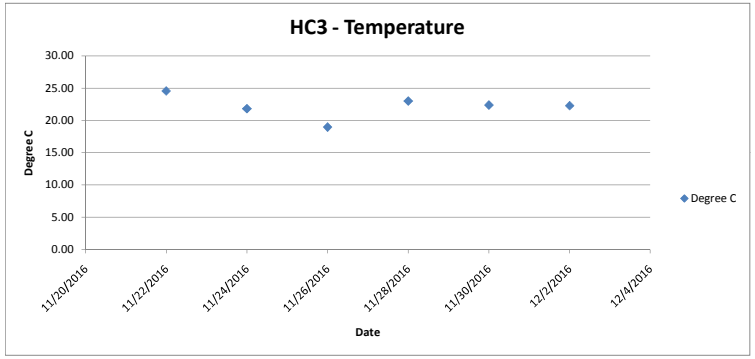

HC2 - Turbidity
Turb (NTU)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

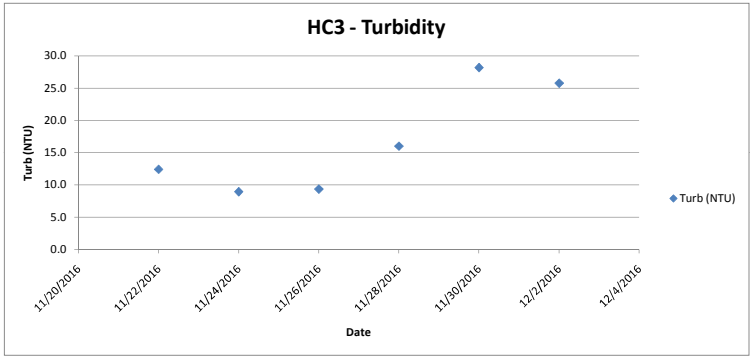

HC2 - Time taken for the debris to be washed away
Second (s)
30
25
20
15
10
5
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Second (s)

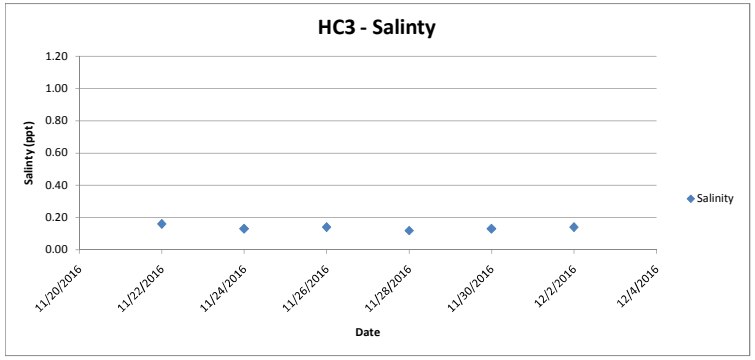

HC2 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

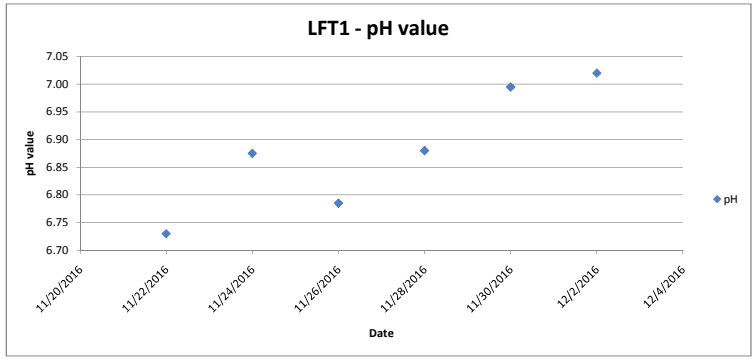

HC3 - pH value
8.20
8.00
7.80
7.60
7.40
7.20
7.00
6.80
6.60
pH value
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

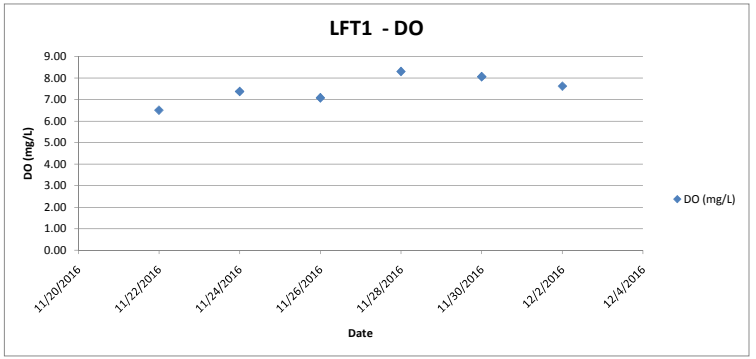

HC3 - DO
12.00
10.00
8.00
6.00
4.00
2.00
0.00
DO (mg/L)
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

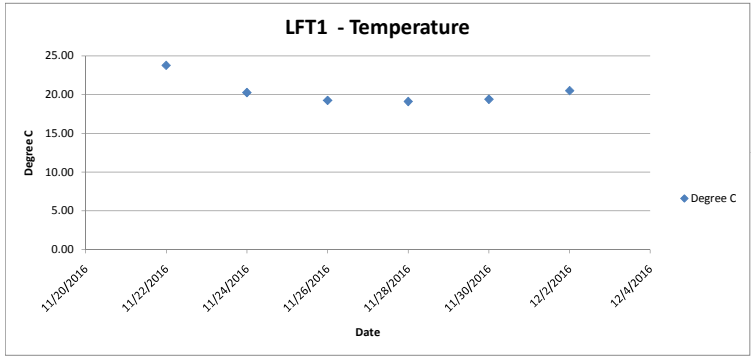

HC3 - Temperature
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Degree C
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

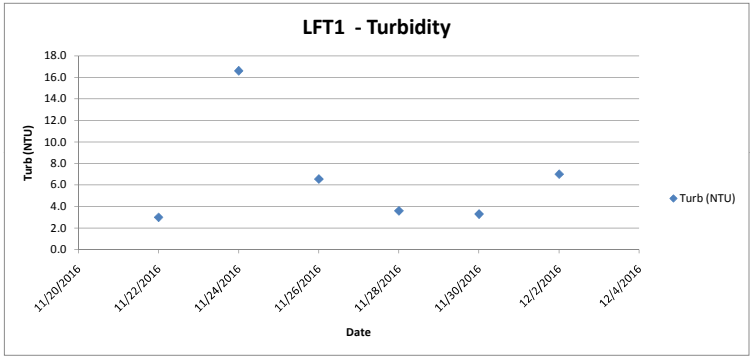

HC3 - Turbidity
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Turb (NTU)
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

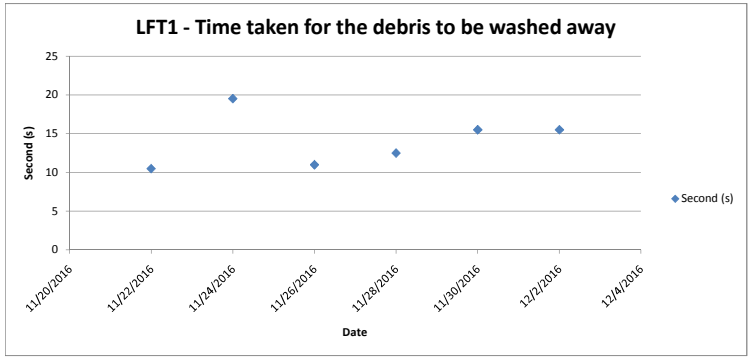

HC3 - Salinty
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Salinity (ppt)
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

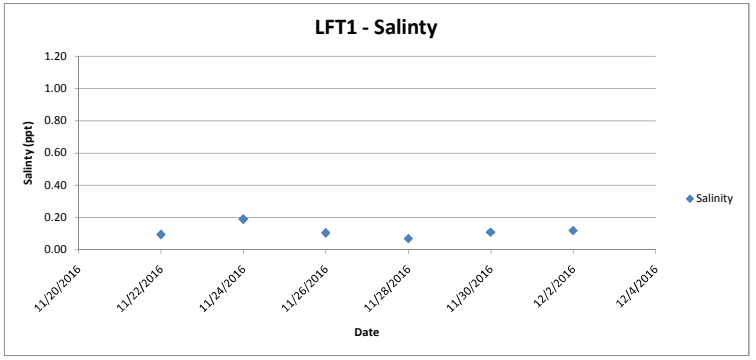

LFT1 - pH value
pH value
7.05
7.00
6.95
6.90
6.85
6.80
6.75
6.70
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

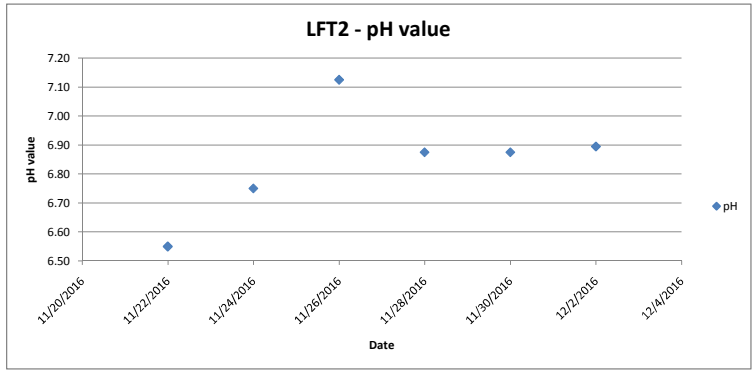

LFT1 - DO
DO (mg/L)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

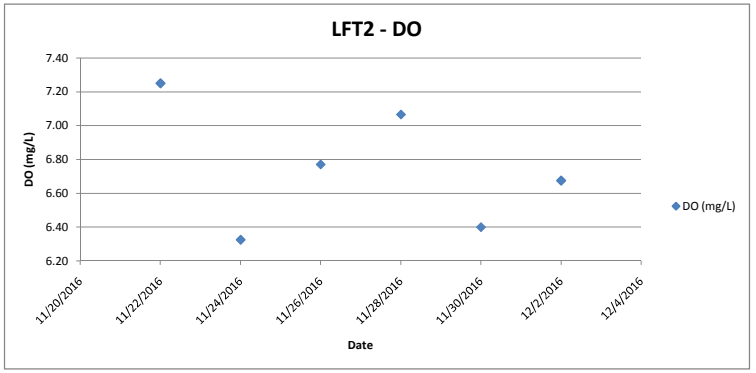

LFT1 - Temperature
Degree C
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

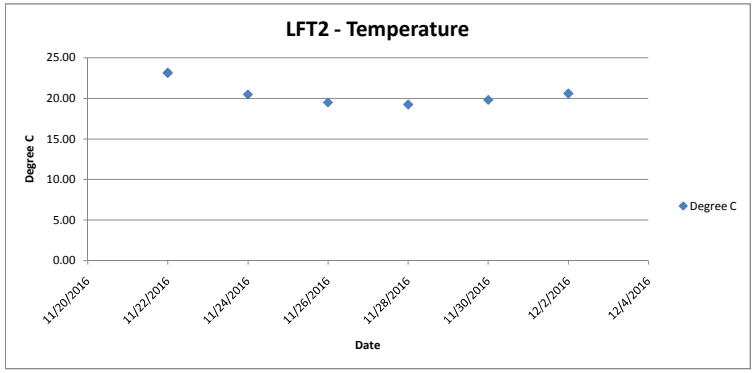

LFT1 - Turbidity
Turb (NTU)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

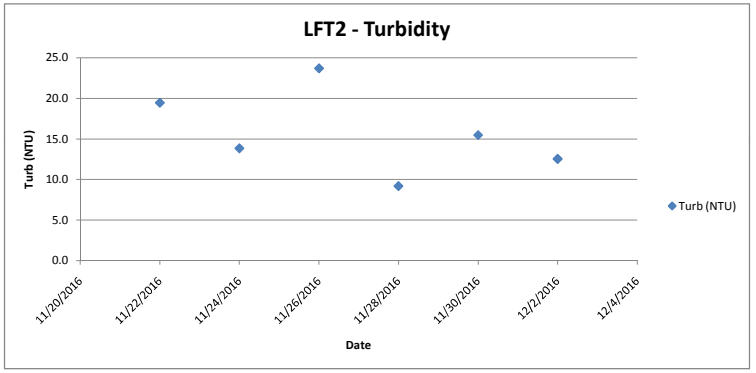

LFT1 - Time taken for the debris to be washed away
Second (s)
25
20
15
10
5
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Second (s)

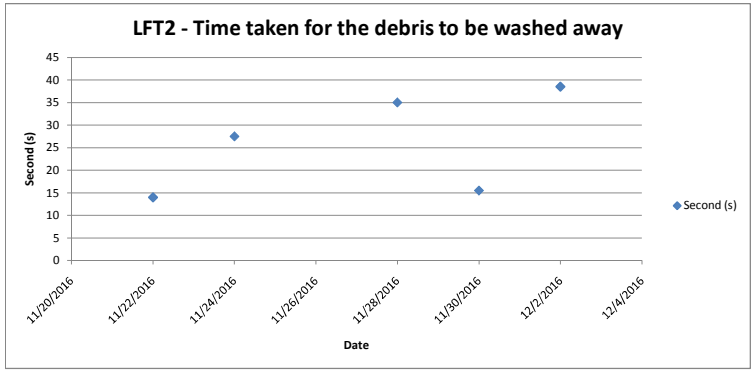

LFT1 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

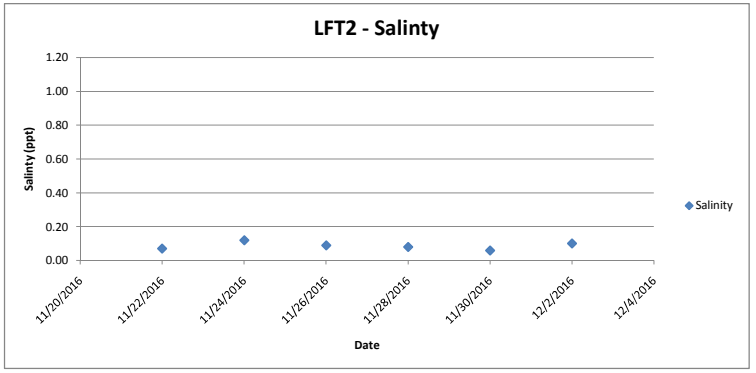

LFT2 - pH value
pH value
7.20
7.10
7.00
6.90
6.80
6.70
6.60
6.50
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

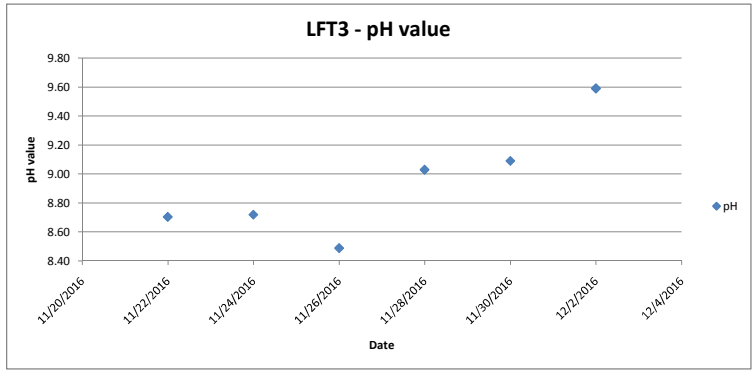

LFT2 - DO
DO (mg/L)
7.40
7.20
7.00
6.80
6.60
6.40
6.20
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

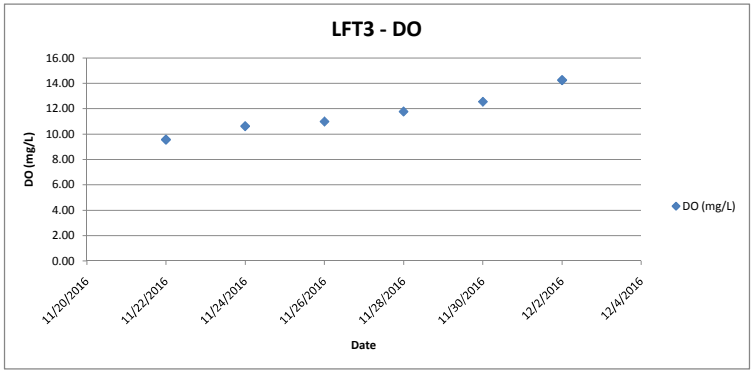

LFT2 - Temperature
Degree C
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

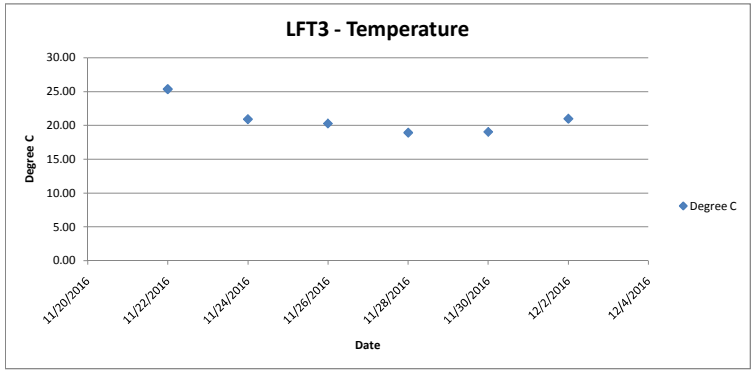

LFT2 - Turbidity
Turb (NTU)
25.0
20.0
15.0
10.0
5.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

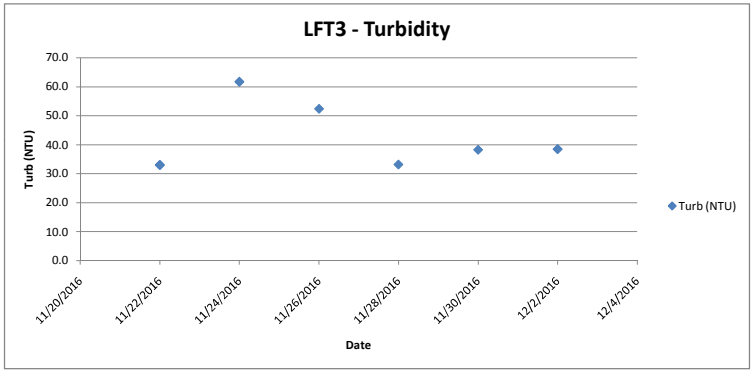

LFT2 - Time taken for the debris to be washed away
Second (s)
45
40
35
30
25
20
15
10
5
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Second (s)

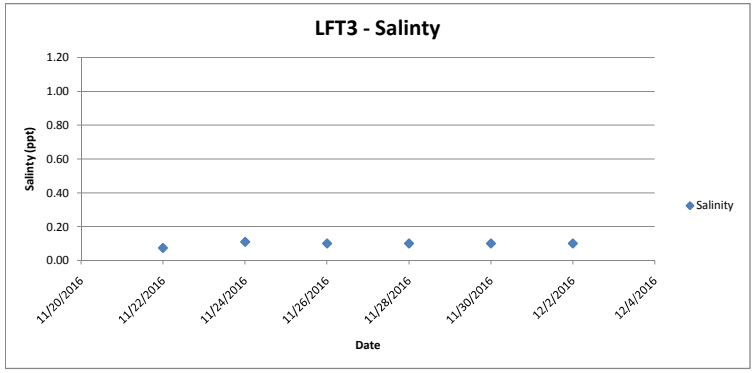

LFT2 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

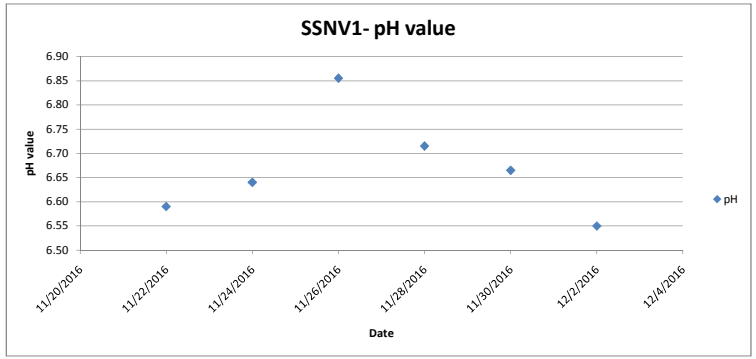

LFT3 - pH value
pH value
9.80
9.60
9.40
9.20
9.00
8.80
8.60
8.40
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

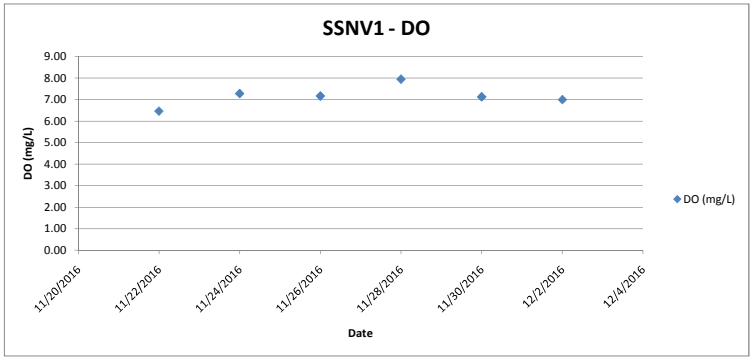

LFT3 - DO
DO (mg/L)
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

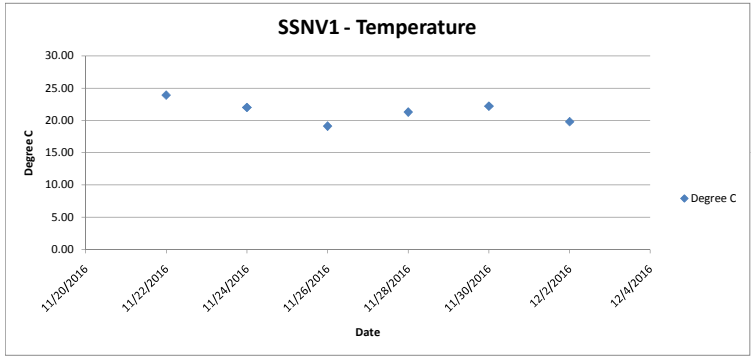

LFT3 - Temperature
Degree C
30.00
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

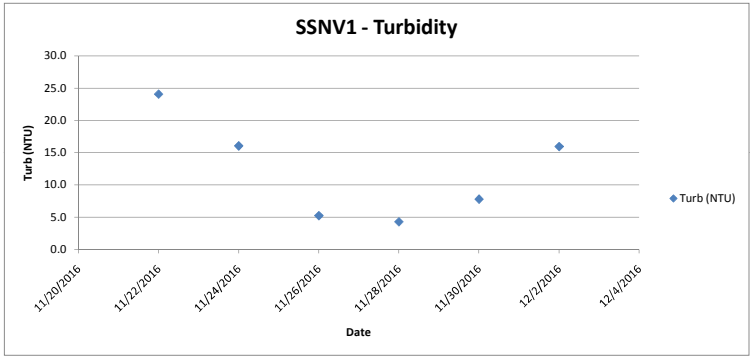

LFT3 - Turbidity
Turb (NTU)
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

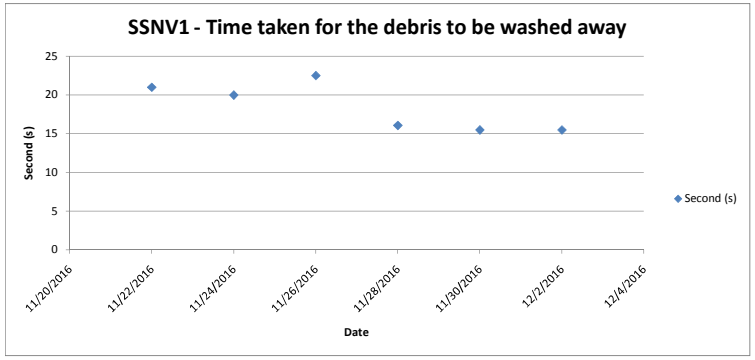

LFT3 - Salinty
Salinty (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

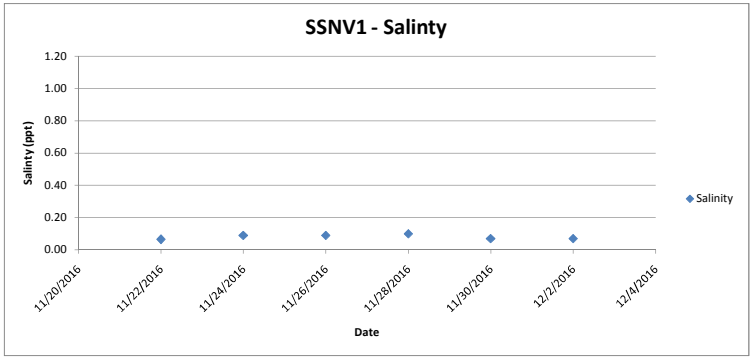

SSNV1- pH value
pH value
6.90
6.85
6.80
6.75
6.70
6.65
6.60
6.55
6.50
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

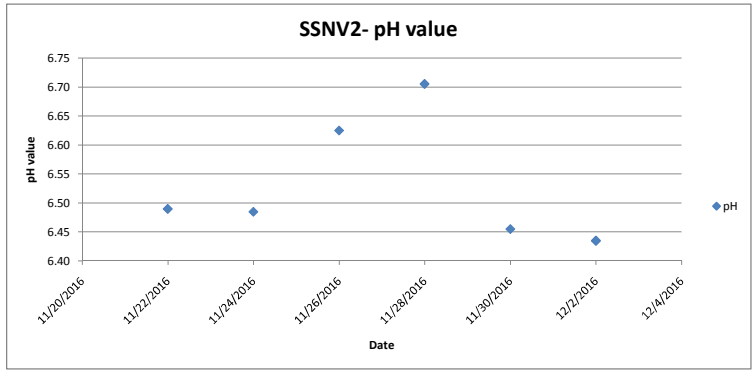

SSNV1 - DO
DO (mg/L)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

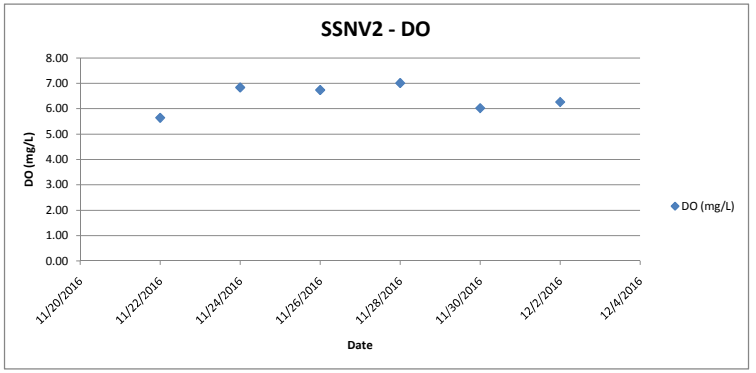

SSNV1 - Temperature
Degree C
30.00
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

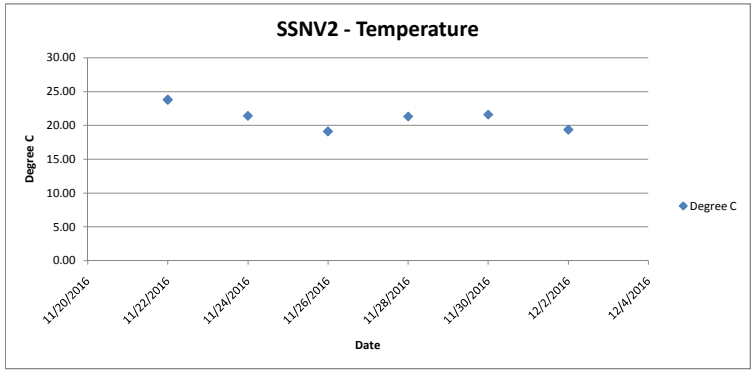

SSNV1 - Turbidity
Turb (NTU)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

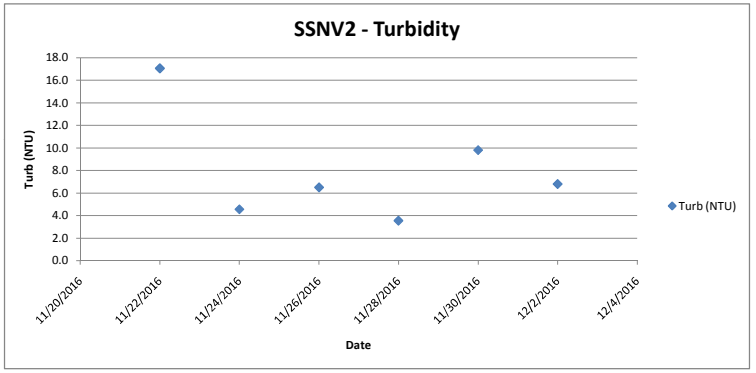

SSNV1 - Time taken for the debris to be washed away
Second (s)
25
20
15
10
5
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/1/2016
12/4/2016
Date
Second (s)

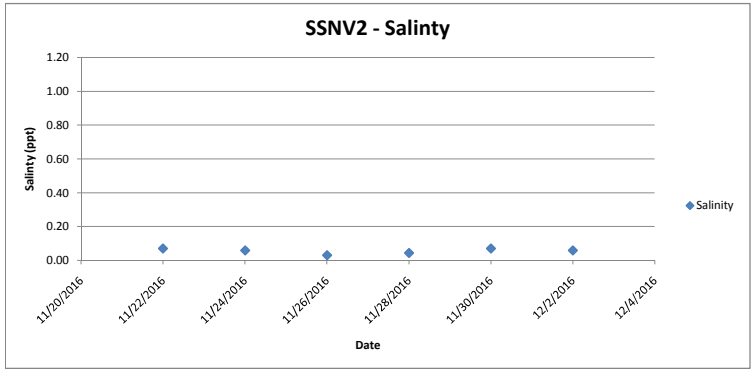

SSNV1 - Salinty
Salinty (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

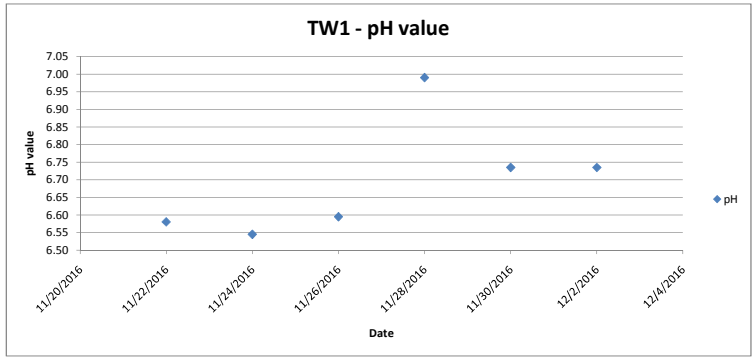

SSNV2- pH value
pH value
6.75
6.70
6.65
6.60
6.55
6.50
6.45
6.40
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

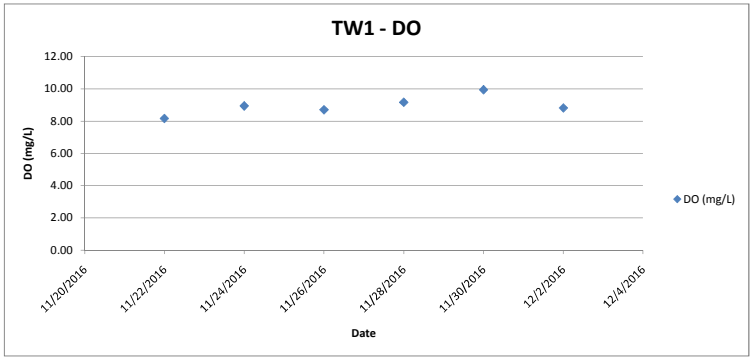

SSNV2 - DO
DO (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

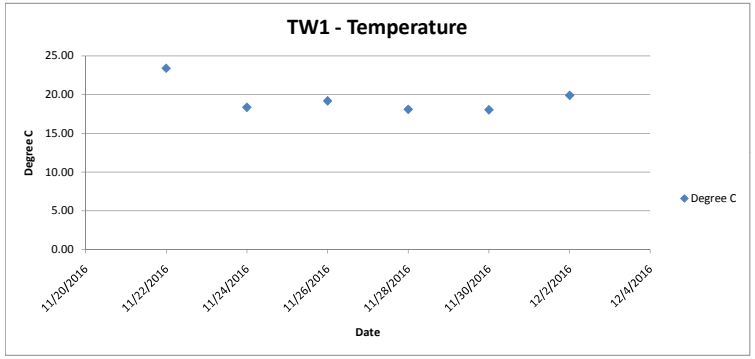

SSNV2 - Temperature
Degree C
30.00
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

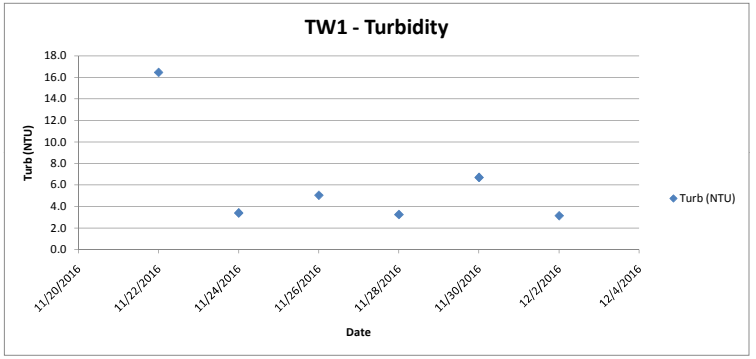

SSNV2 - Turbidity
Turb (NTU)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

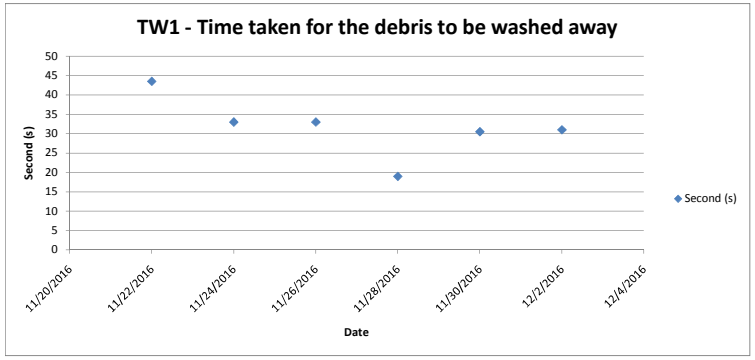

SSNV2 - Salinty
Salinty (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

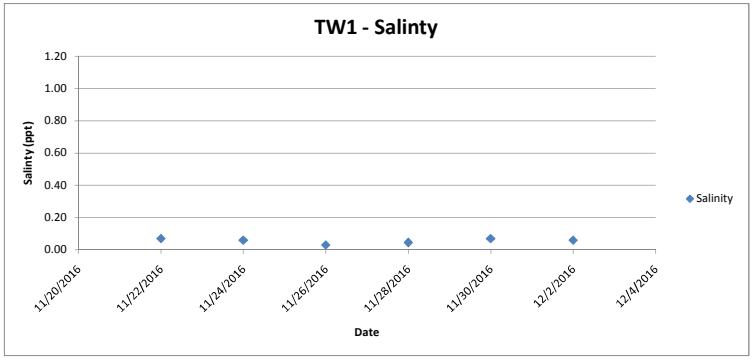

TW1 - pH value
pH value
7.05
7.00
6.95
6.90
6.85
6.80
6.75
6.70
6.65
6.60
6.55
6.50
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

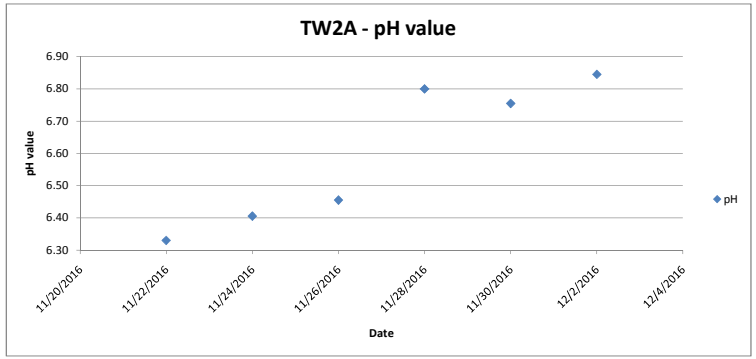

TW1 - DO
DO (mg/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

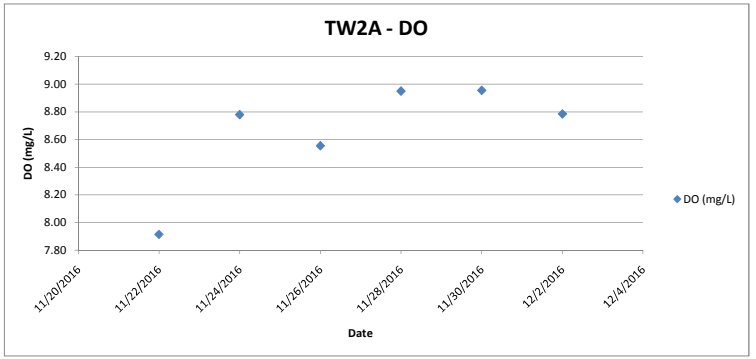

TW1 - Temperature
Degree C
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

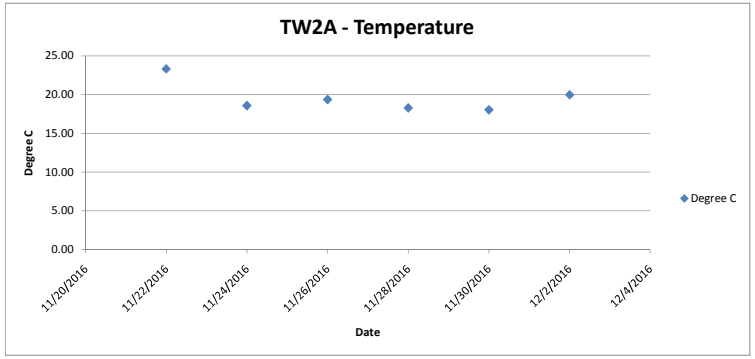

TW1 - Turbidity
Turb (NTU)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

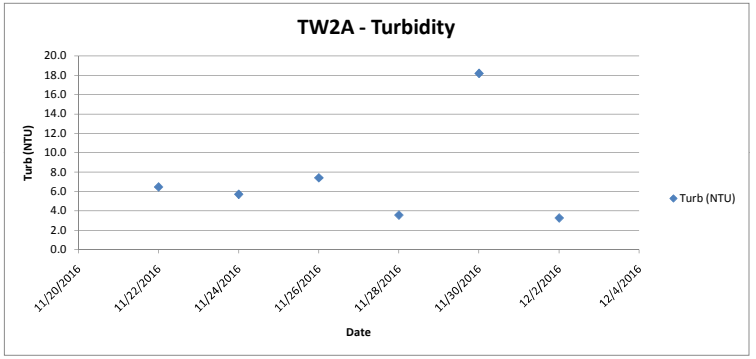

TW1 - Time taken for the debris to be washed away
Second (s)
50
45
40
35
30
25
20
15
10
5
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/1/2016
12/4/2016
Date
Second (s)

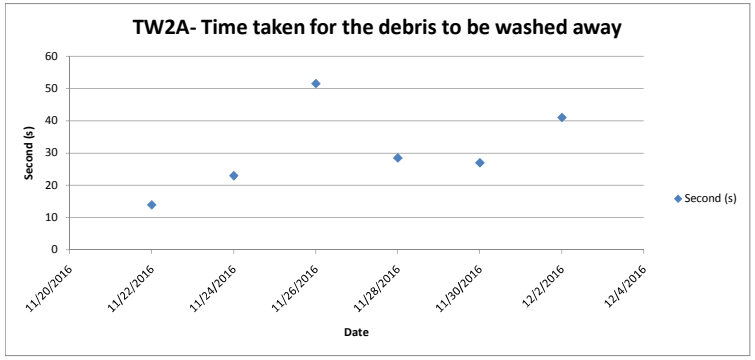

TW1 - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

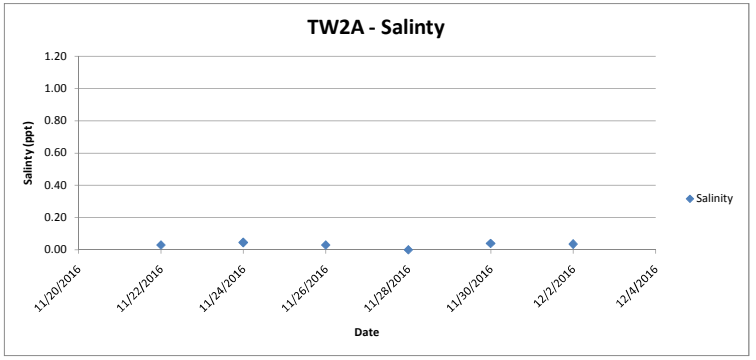

TW2A - pH value
pH value
6.90
6.80
6.70
6.60
6.50
6.40
6.30
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
pH

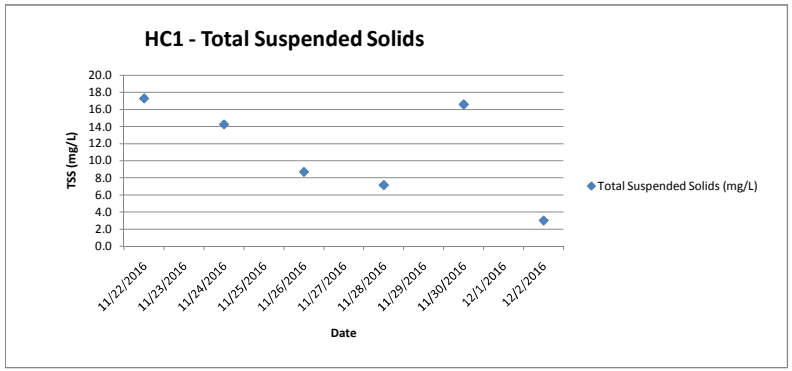

TW2A - DO
DO (mg/L)
9.20
9.00
8.80
8.60
8.40
8.20
8.00
7.80
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
DO (mg/L)

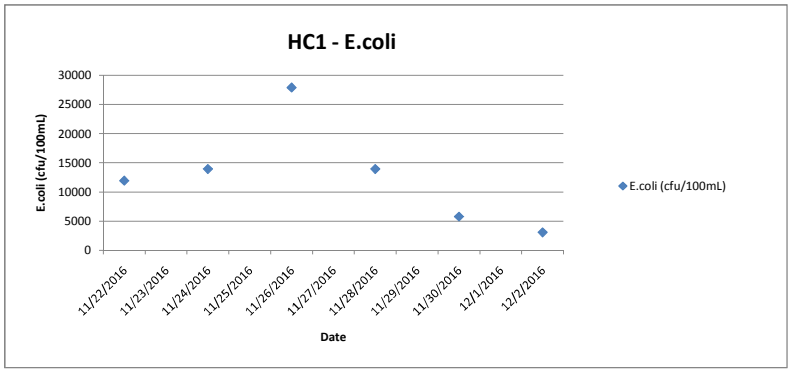

TW2A - Temperature
Degree C
25.00
20.00
15.00
10.00
5.00
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Degree C

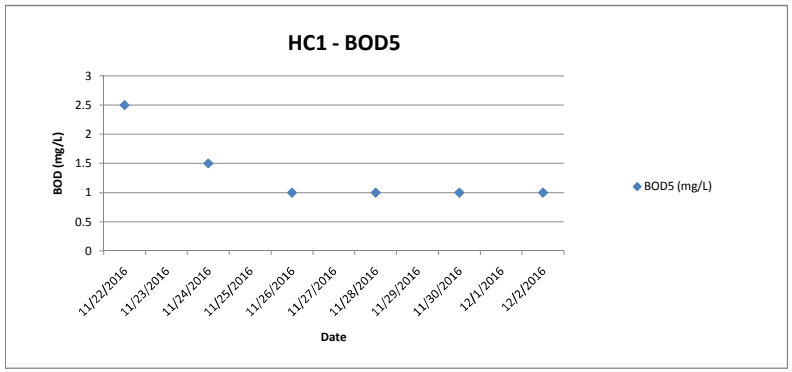

TW2A - Turbidity
Turb (NTU)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Turb (NTU)

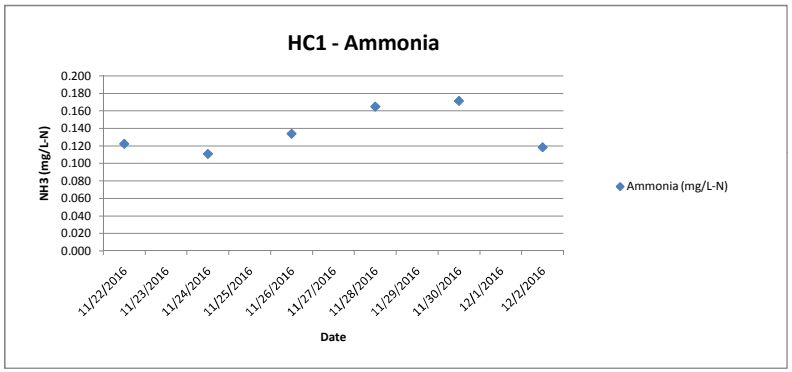

TW2A- Time taken for the debris to be washed away
Second (s)
60
50
40
30
20
10
0
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/1/2016
12/4/2016
Date
Second (s)

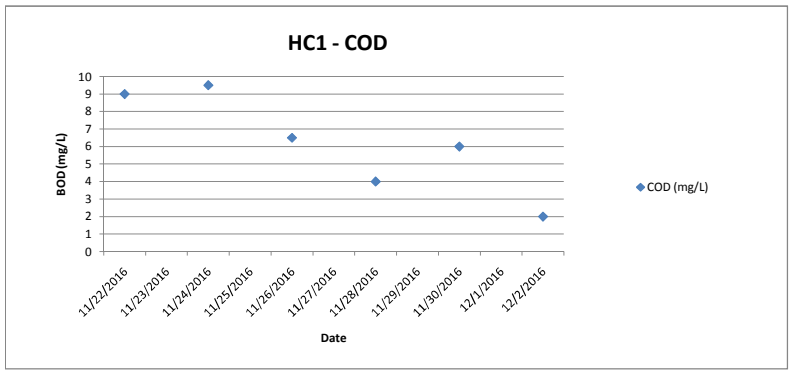

TW2A - Salinty
Salinity (ppt)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/20/2016
11/22/2016
11/24/2016
11/26/2016
11/28/2016
11/30/2016
12/2/2016
12/4/2016
Date
Salinity

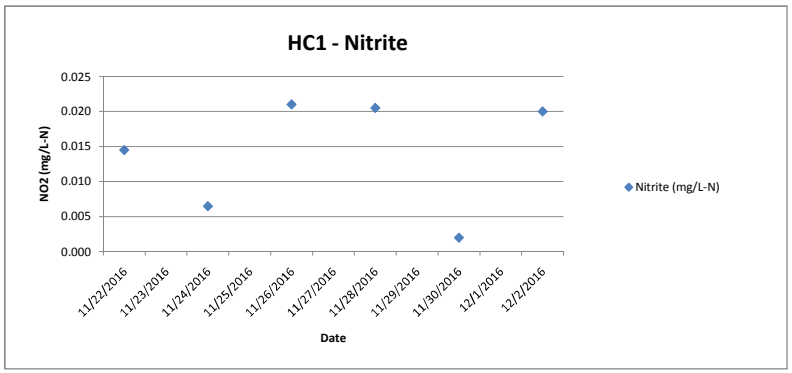

HC1 - Total Suspended Solids
TSS (mg/L)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

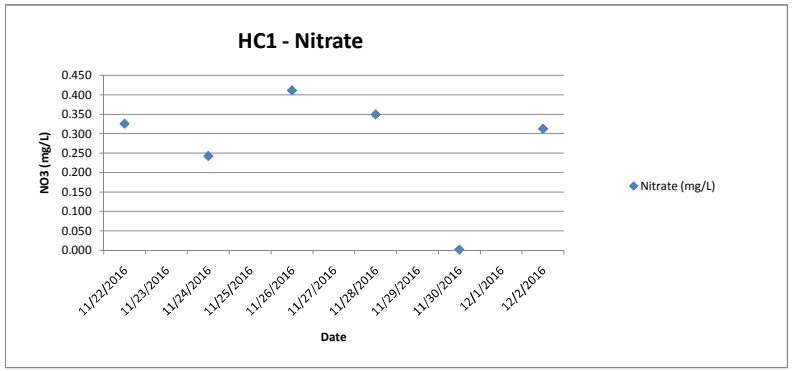

HC1 - E.coli
E.coli (cfu/100mL)
30000
25000
20000
15000
10000
5000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

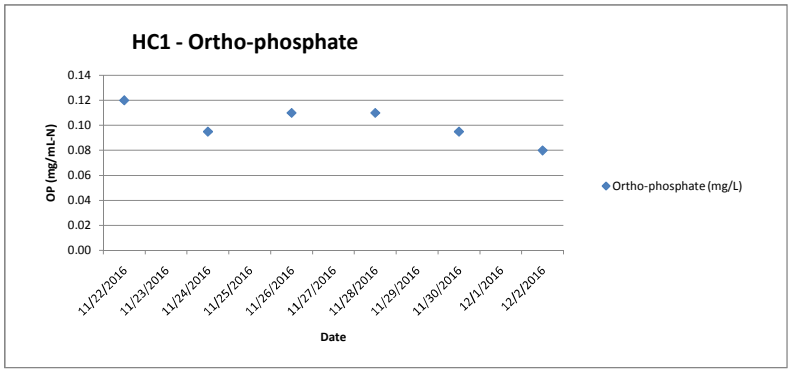

HC1 - BOD5
BOD (mg/L)
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

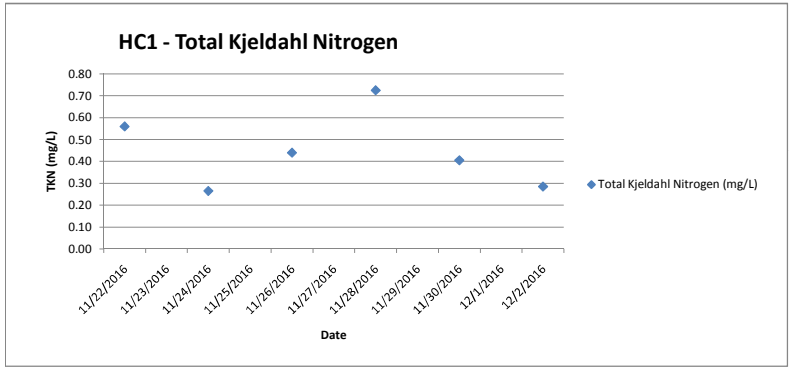

HC1 - Ammonia
NH3 (mg/L-N)
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

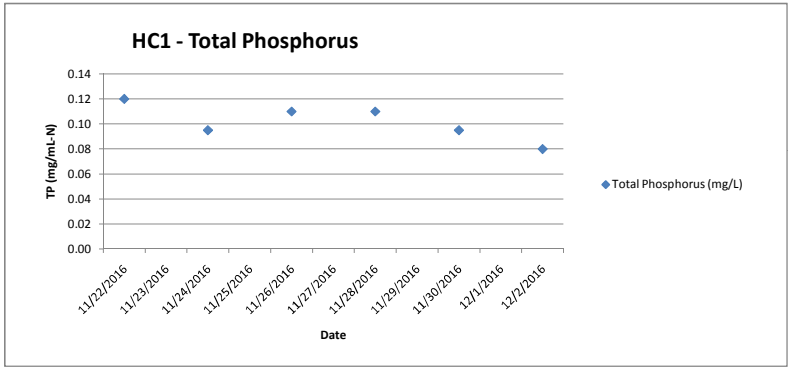

HC1 - COD
BOD (mg/L)
10
9
8
7
6
5
4
3
2
1
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

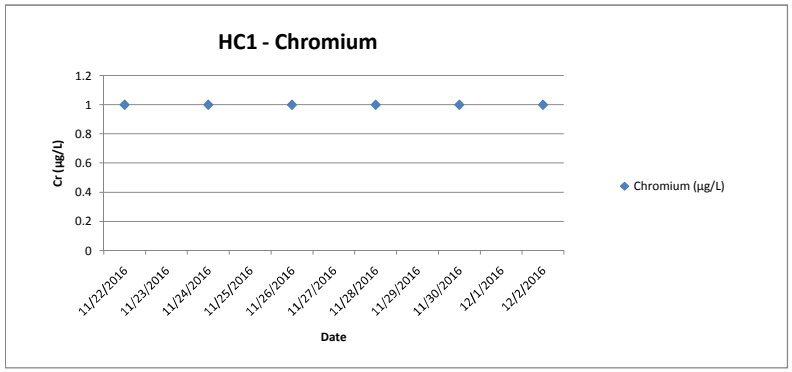

HC1 - Nitrite
NO2 (mg/L-N)
0.025
0.020
0.015
0.010
0.005
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

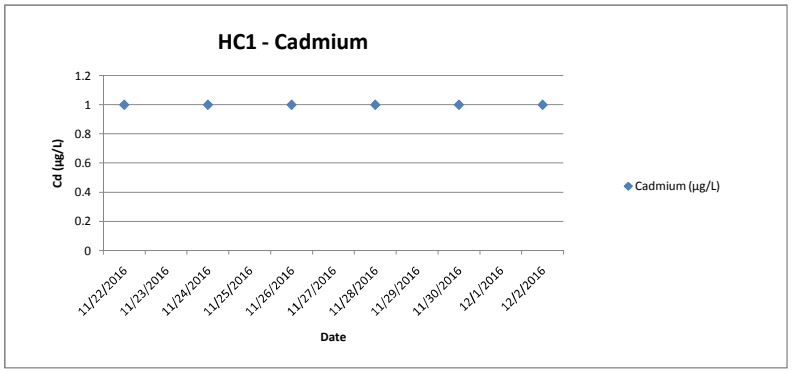

HC1 - Nitrate
NO3 (mg/L)
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

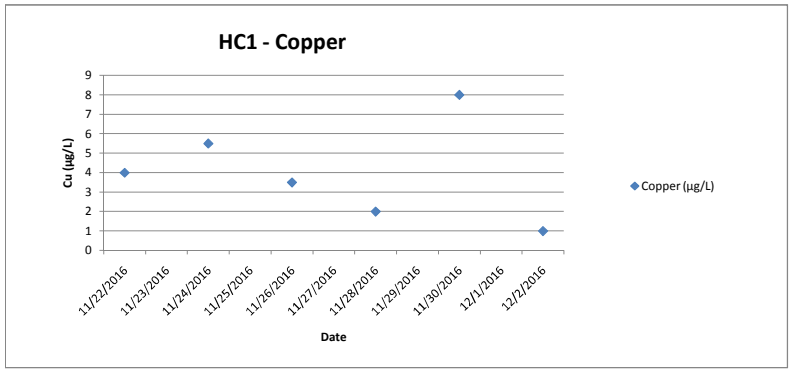

HC1 - Ortho-phosphate
OP (mg/mL-N)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

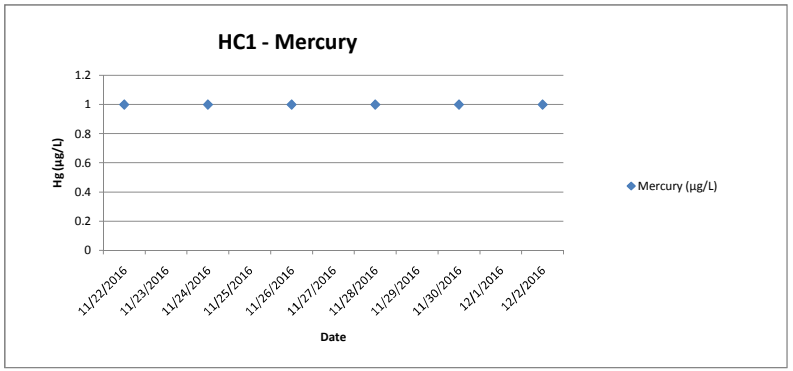

HC1 - Total Kjeldahl Nitrogen
TKN (mg/L)
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

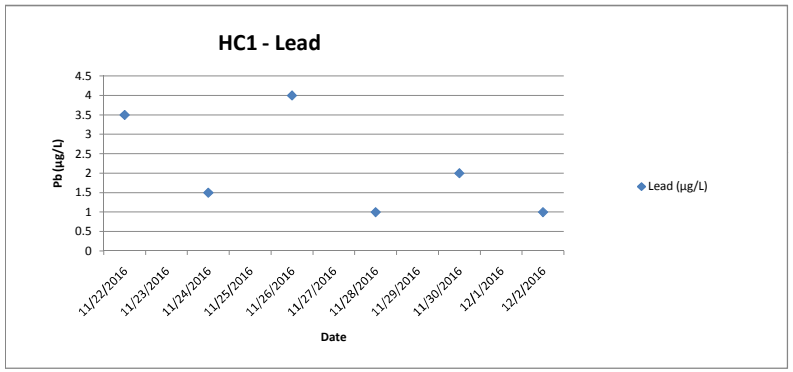

HC1 - Total Phosphorus
TP (mg/mL-N)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

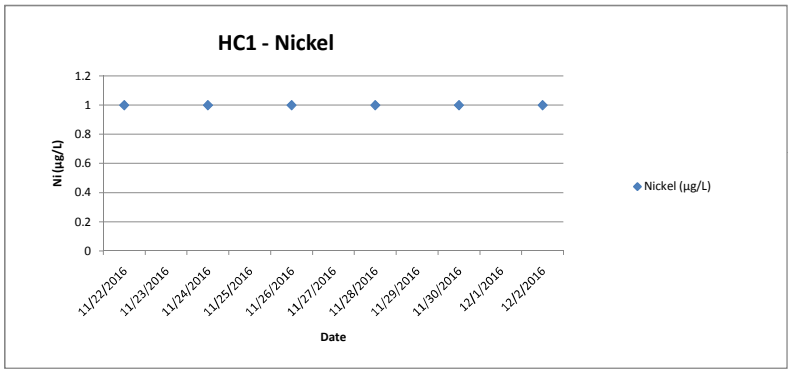

HC1 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

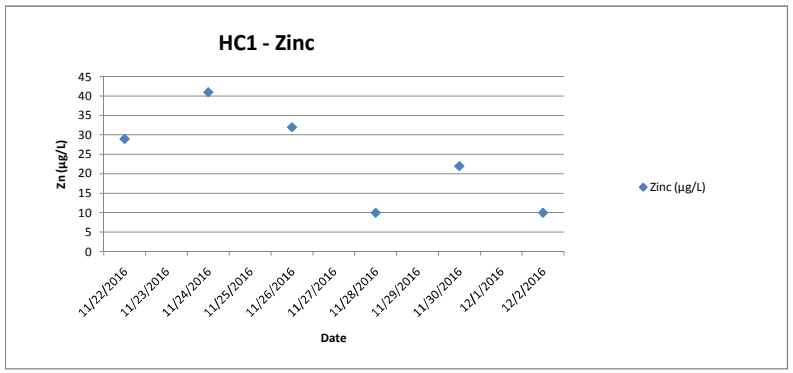

HC1 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

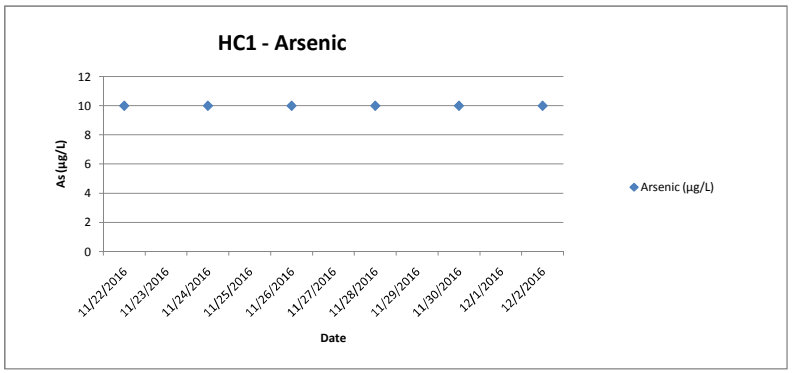

HC1 - Copper
Cu (µg/L)
0
1
2
3
4
5
6
7
8
9
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

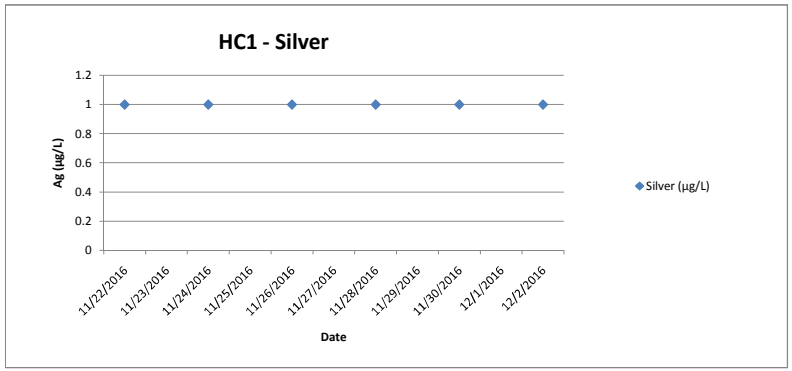

HC1 - Mercury
Hg (µg/L)
0
0.2
0.4
0.6
0.8
1
1.2
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

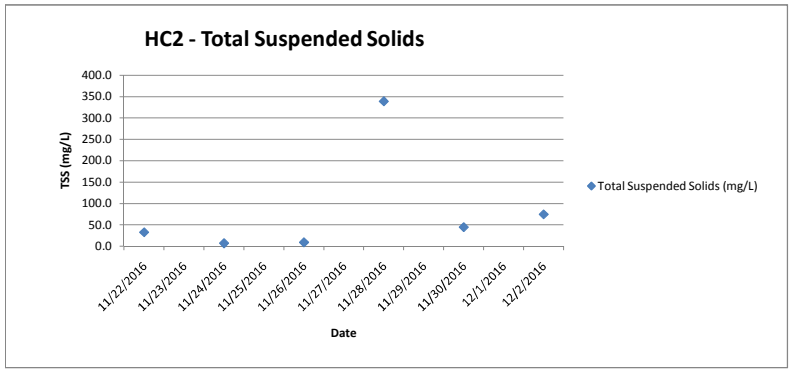

HC1 - Lead
Pb (µg/L)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

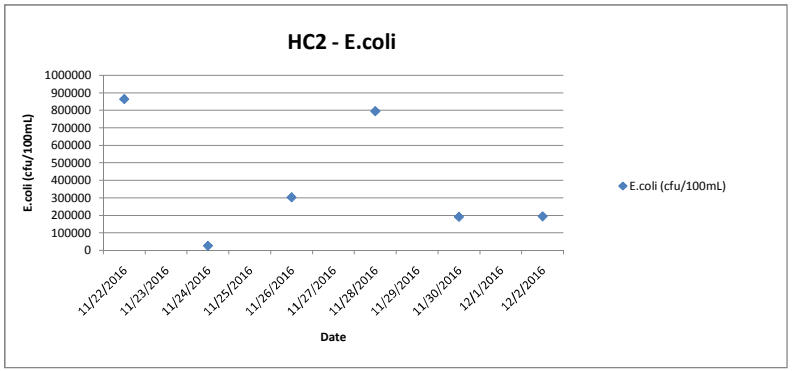

HC1 - Nickel
Ni (µg/L)
0
0.2
0.4
0.6
0.8
1
1.2
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

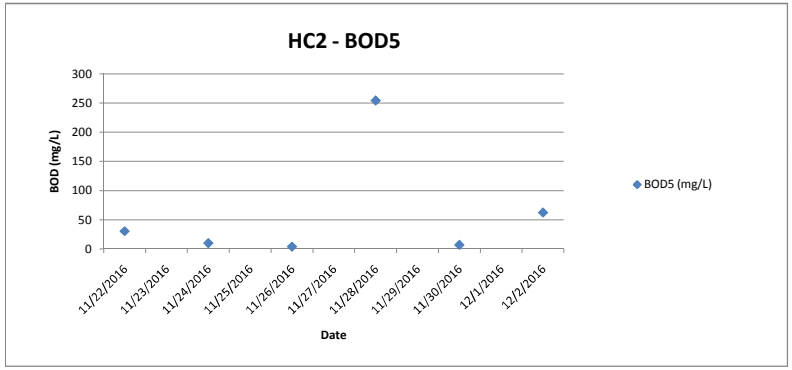

HC1 - Zinc
Zn (µg/L)
0
5
10
15
20
25
30
35
40
45
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

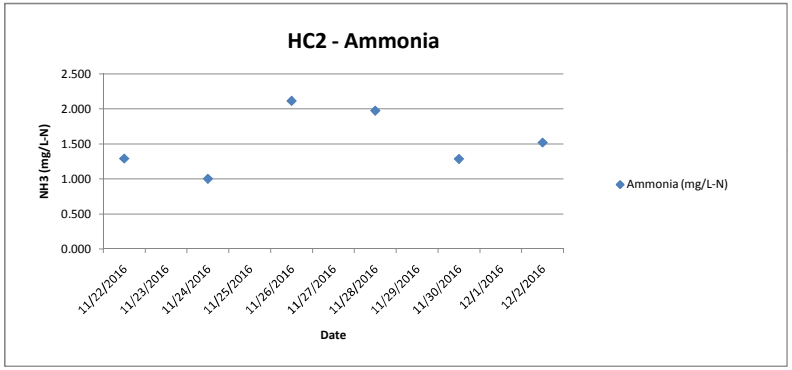

HC1 - Arsenic
As (µg/L)
0
2
4
6
8
10
12
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

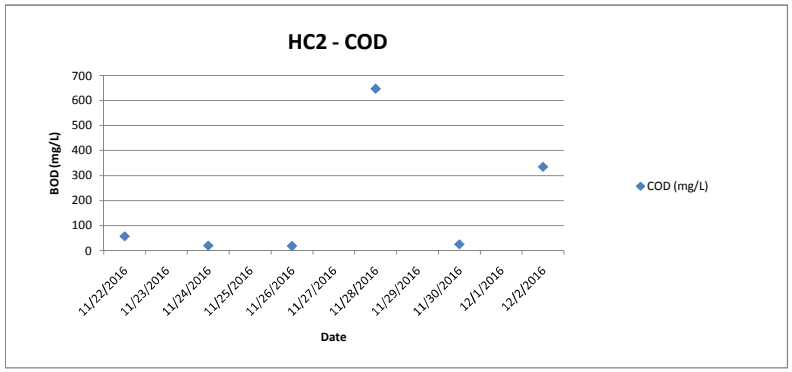

HC1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

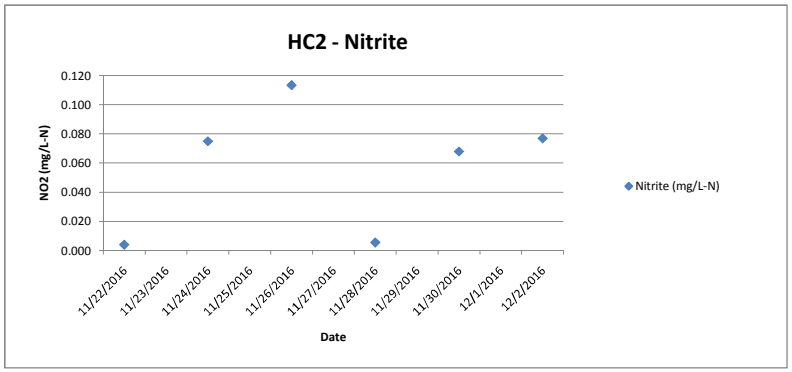

HC2 - Total Suspended Solids
TSS (mg/L)
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

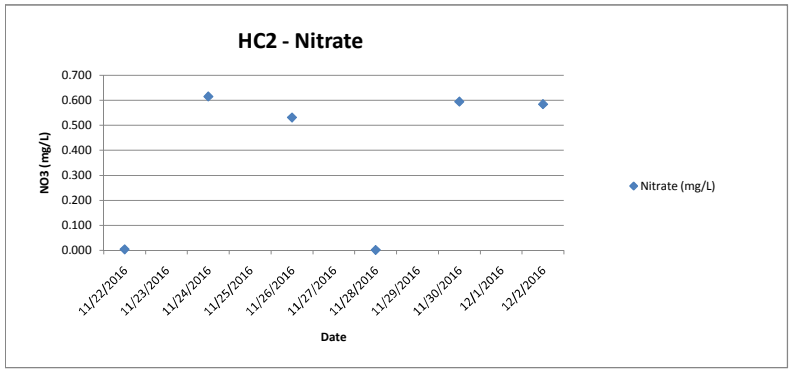

HC2 - E.coli
E.coli (cfu/100mL)
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

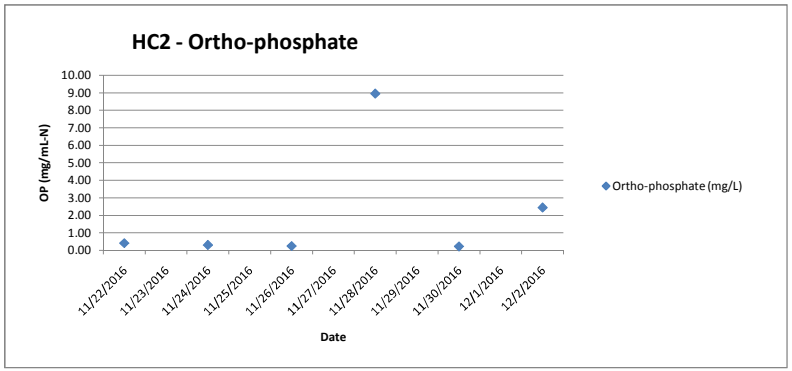

HC2 - BOD5
BOD (mg/L)
300
250
200
150
100
50
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

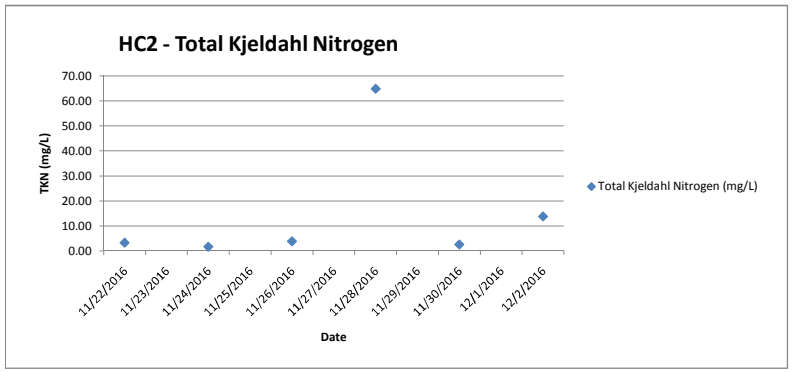

HC2 - Ammonia
NH3 (mg/L-N)
2.500
2.000
1.500
1.000
0.500
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

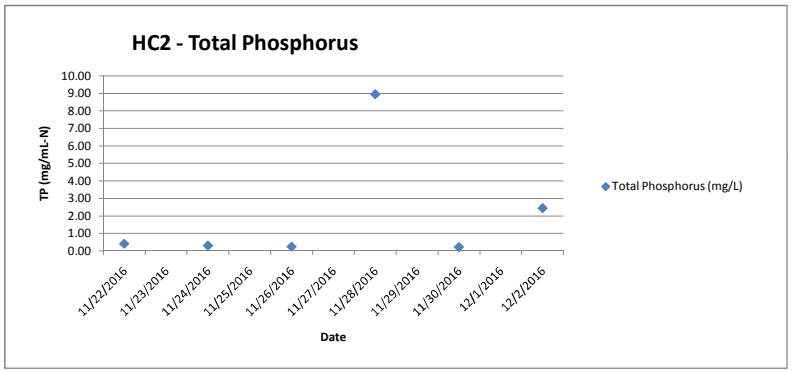

HC2 - COD
BOD (mg/L)
700
600
500
400
300
200
100
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

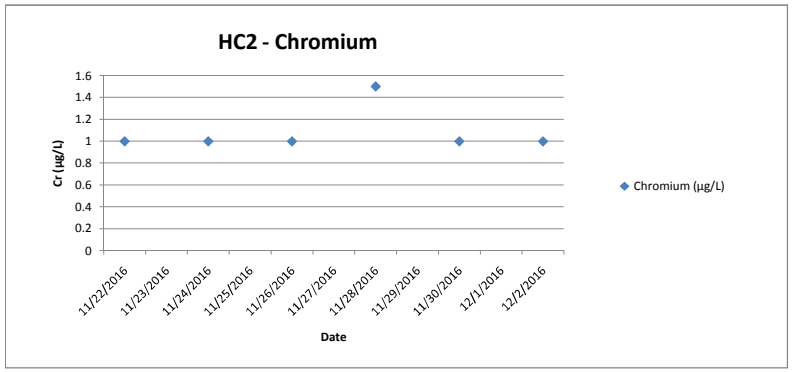

HC2 - Nitrite
NO2 (mg/L-N)
0.120
0.100
0.080
0.060
0.040
0.020
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

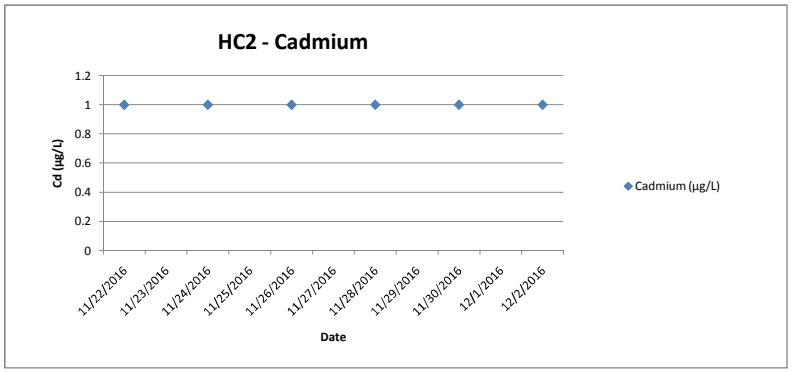

HC2 - Nitrate
NO3 (mg/L)
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

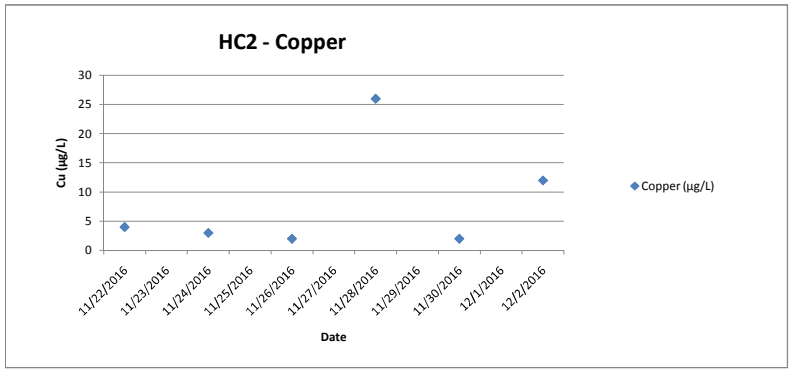

HC2 - Ortho-phosphate
OP (mg/mL-N)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

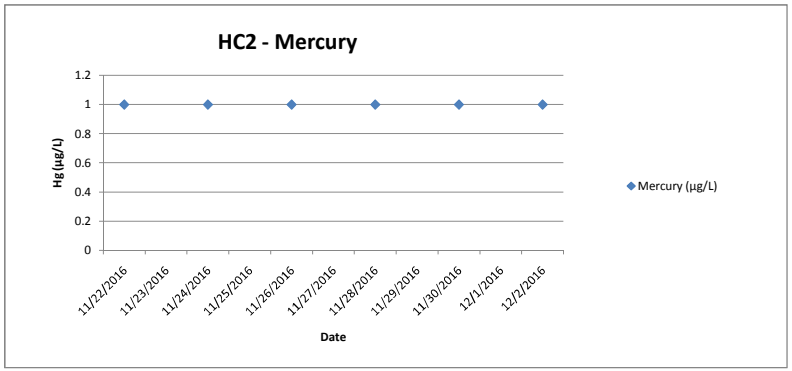

HC2 - Total Kjeldahl Nitrogen
TKN (mg/L)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

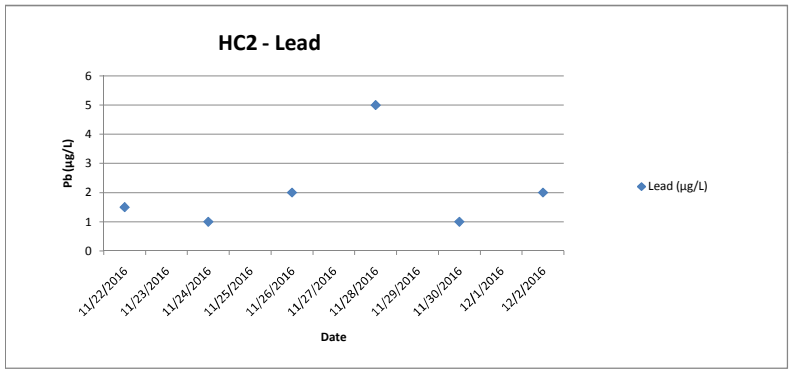

HC2 - Total Phosphorus
TP (mg/mL-N)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

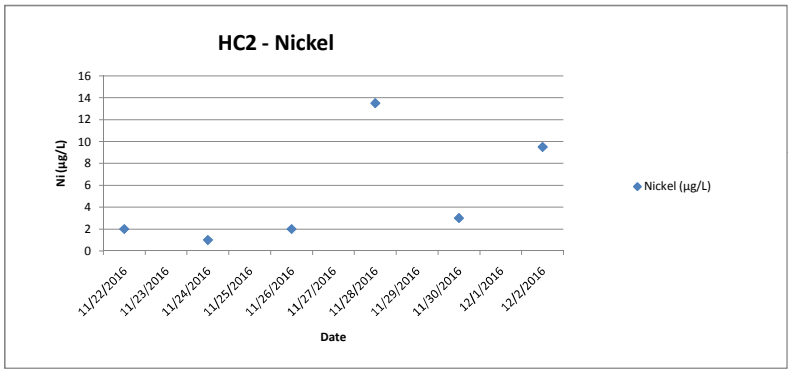

HC2 - Chromium
Cr (µg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

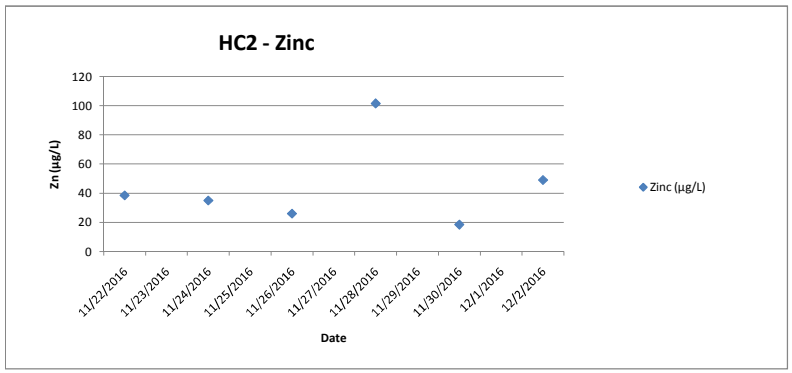

HC2 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

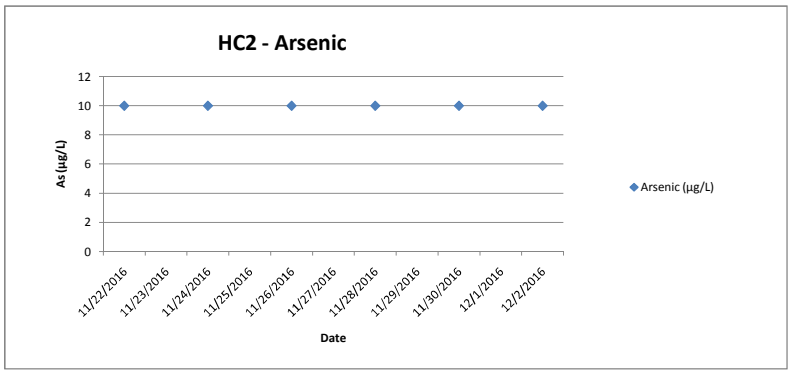

HC2 - Copper
Cu (µg/L)
30
25
20
15
10
5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

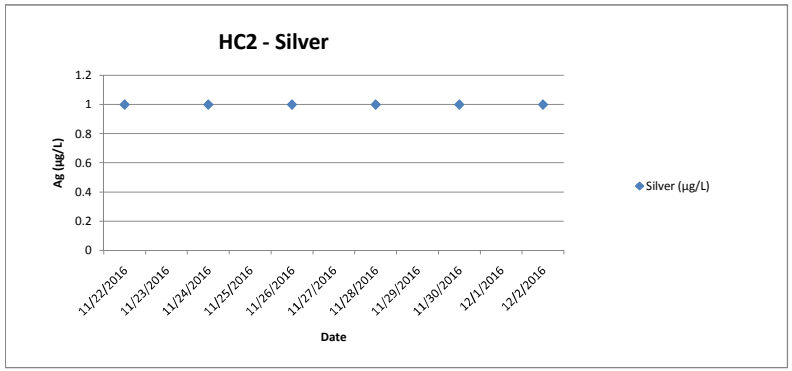

HC2 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

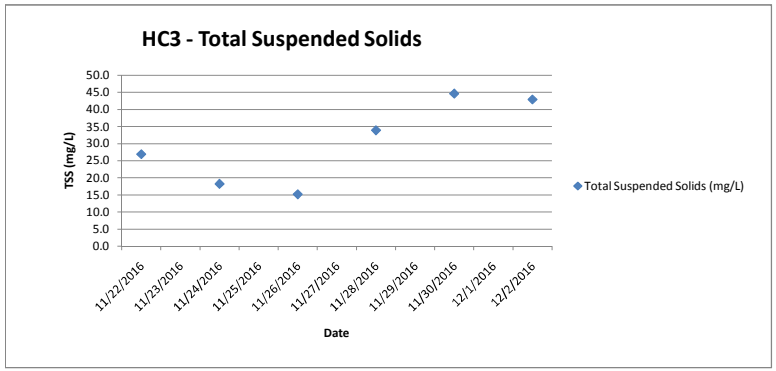

HC2 - Lead
Pb (µg/L)
6
5
4
3
2
1
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

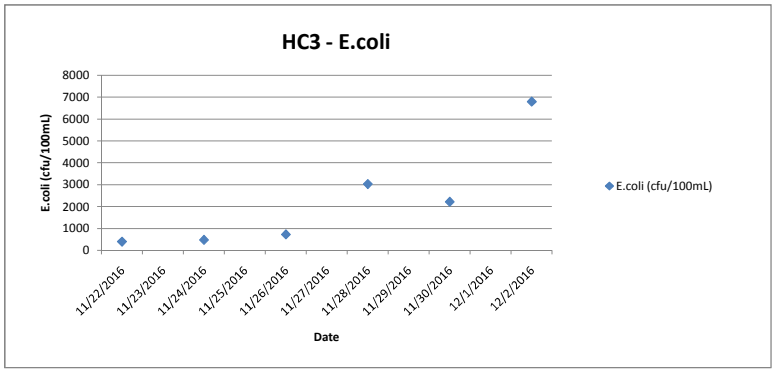

HC2 - Nickel
Ni (µg/L)
16
14
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

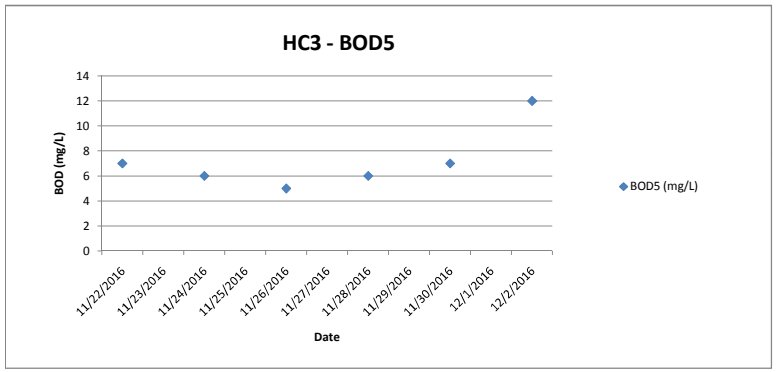

HC2 - Zinc
Zn (µg/L)
120
100
80
60
40
20
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

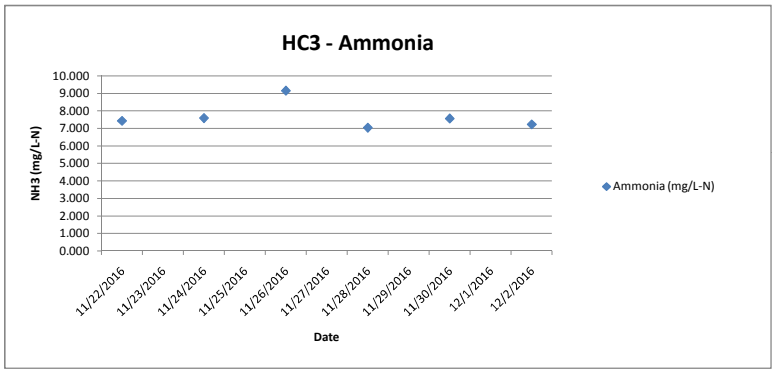

HC2 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

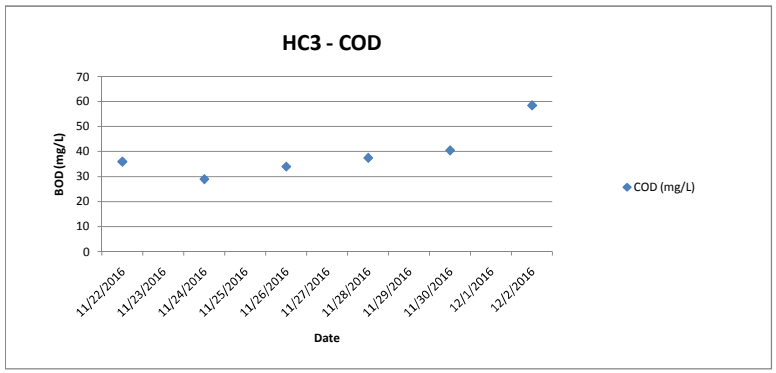

HC2 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

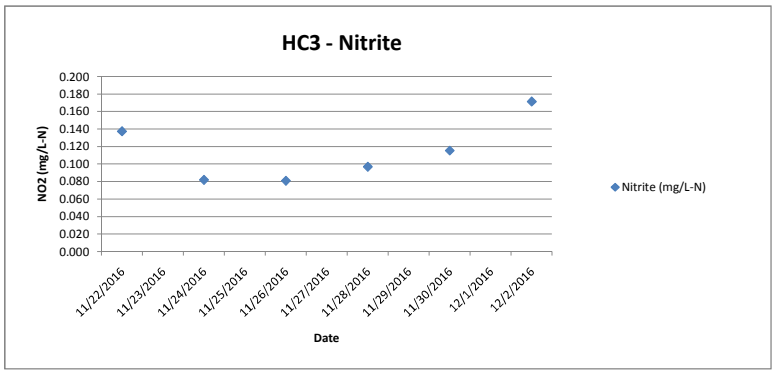

HC3 - Total Suspended Solids
TSS (mg/L)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

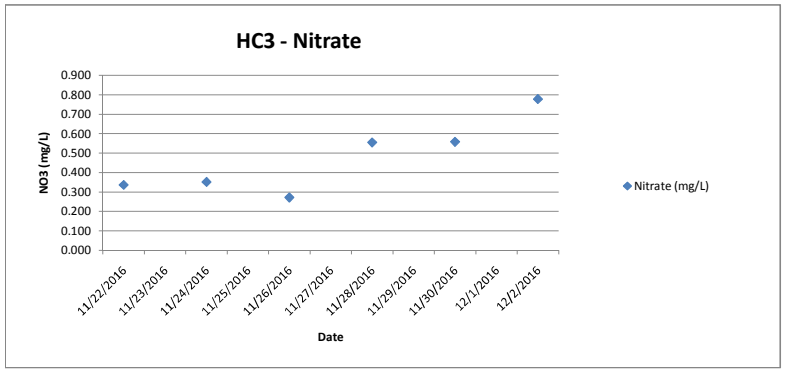

HC3 - E.coli
E.coli (cfu/100mL)
8000
7000
6000
5000
4000
3000
2000
1000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

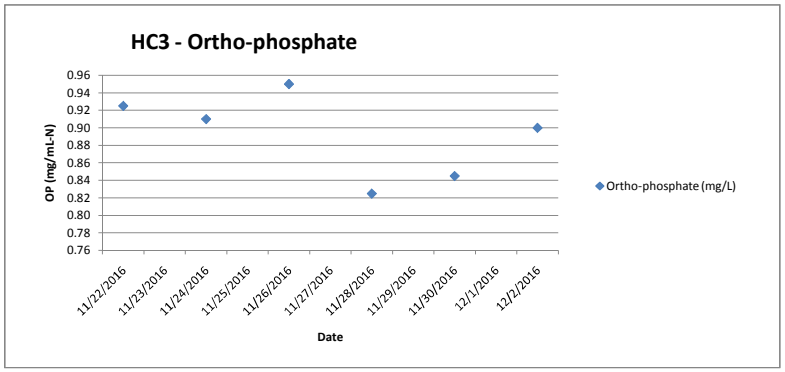

HC3 - BOD5
BOD (mg/L)
14
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

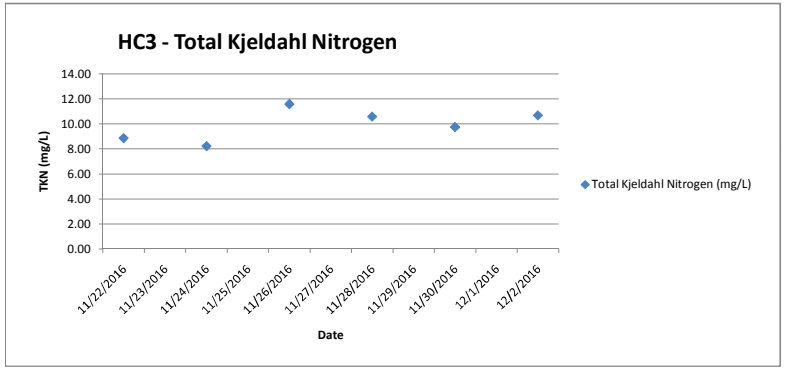

HC3 - Ammonia
NH3 (mg/L-N)
10.000
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

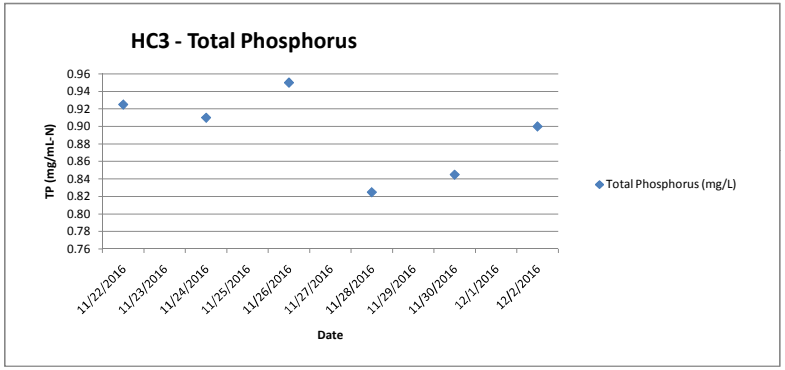

HC3 - COD
BOD (mg/L)
70
60
50
40
30
20
10
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

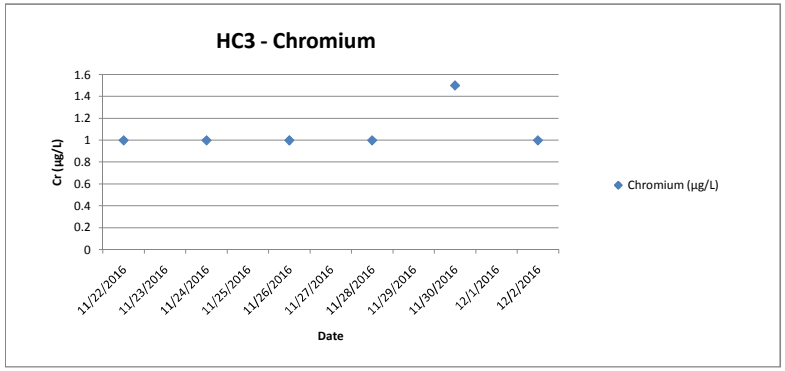

HC3 - Nitrite
NO2 (mg/L-N)
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

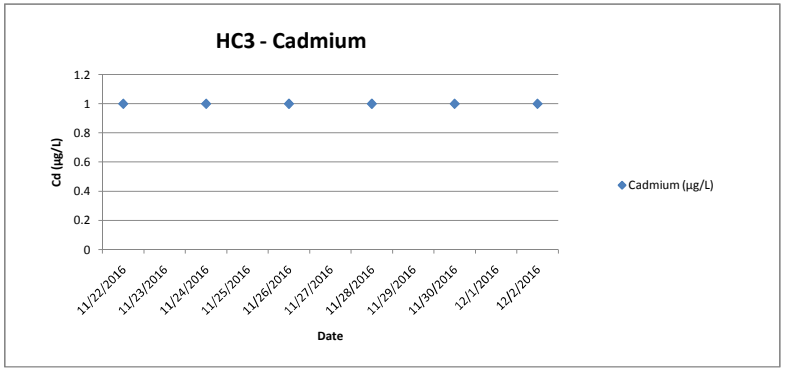

HC3 - Nitrate
NO3 (mg/L)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

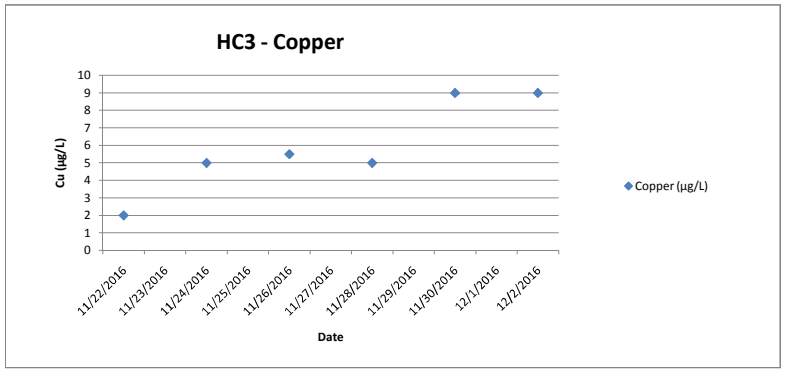

HC3 - Ortho-phosphate
OP (mg/mL-N)
0.96
0.94
0.92
0.90
0.88
0.86
0.84
0.82
0.80
0.78
0.76
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

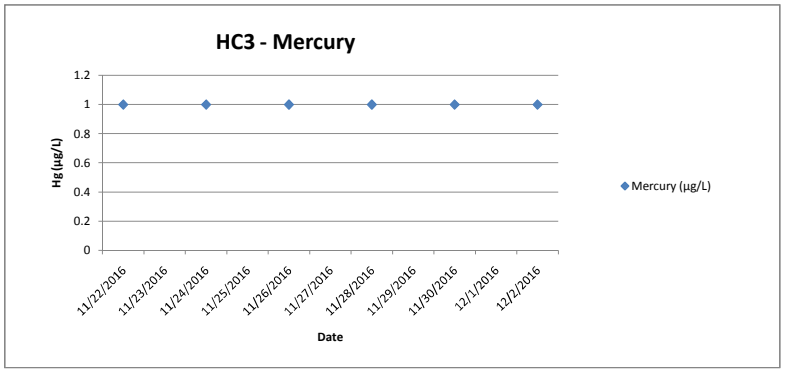

HC3 - Total Kjeldahl Nitrogen
TKN (mg/L)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

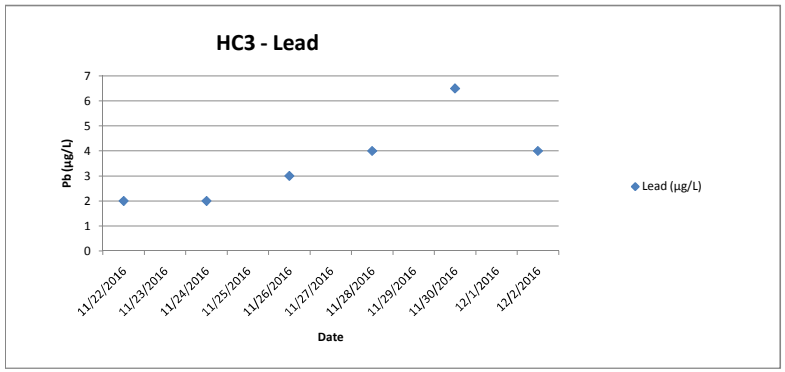

HC3 - Total Phosphorus
TP (mg/mL-N)
0.96
0.94
0.92
0.90
0.88
0.86
0.84
0.82
0.80
0.78
0.76
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

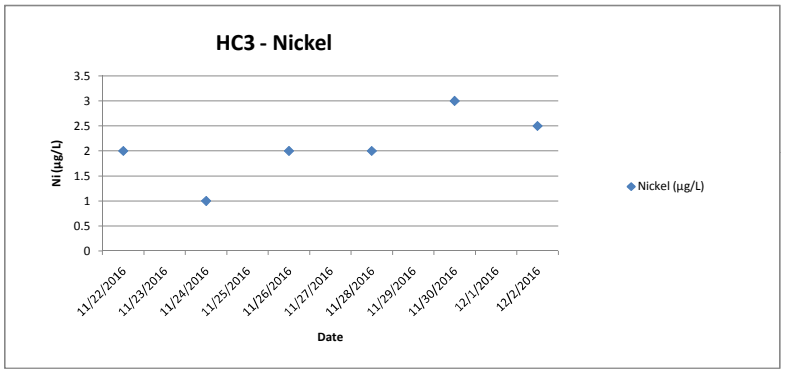

HC3 - Chromium
Cr (µg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

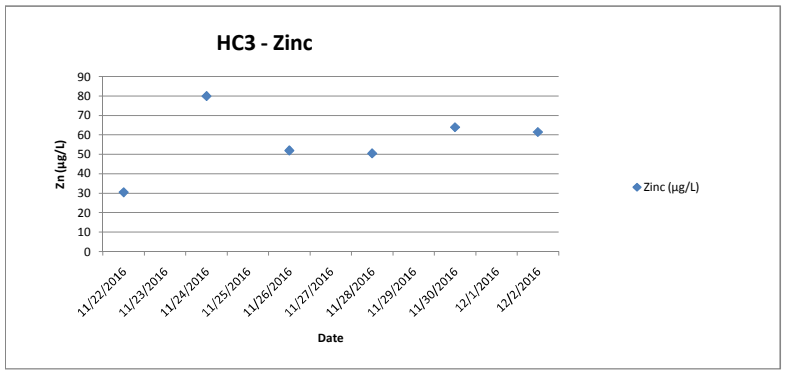

HC3 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

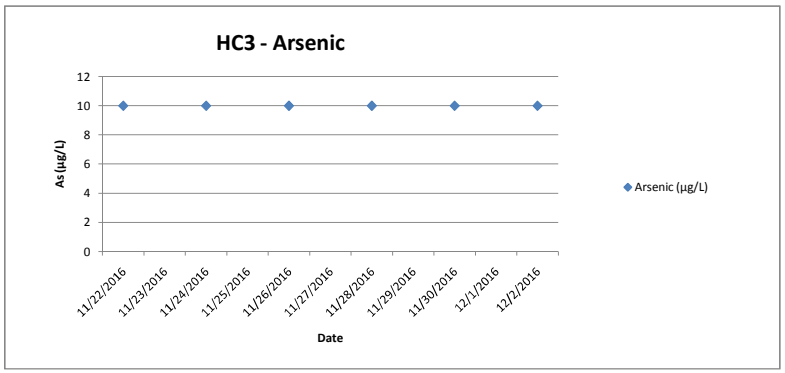

HC3 - Copper
Cu (µg/L)
Date
Copper (µg/L)

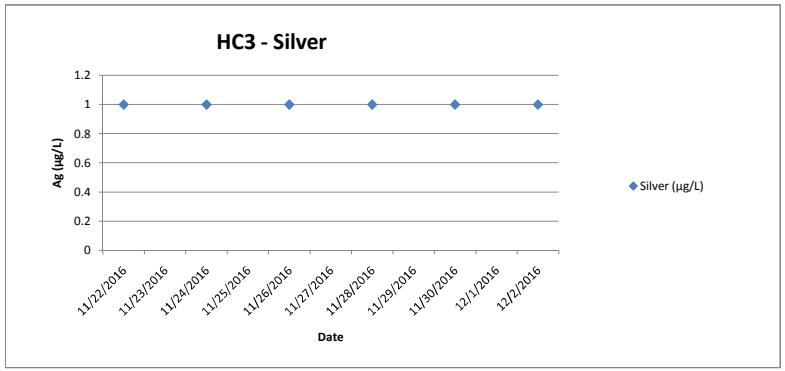

HC3 - Mercury
Hg (µg/L)
Date
Mercury (µg/L)

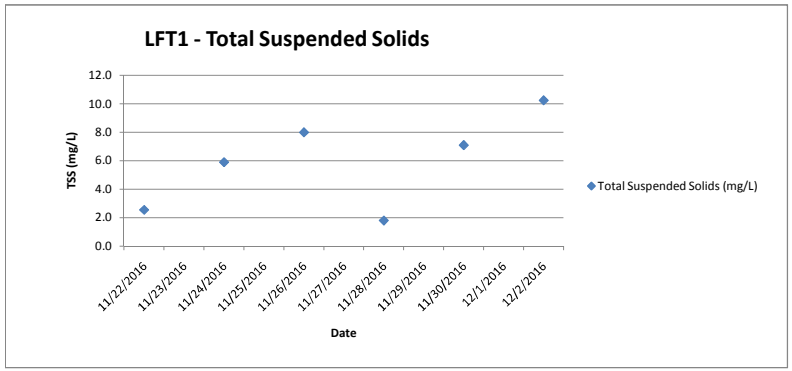

HC3 - Lead
Pb (µg/L)
Date
Lead (µg/L)

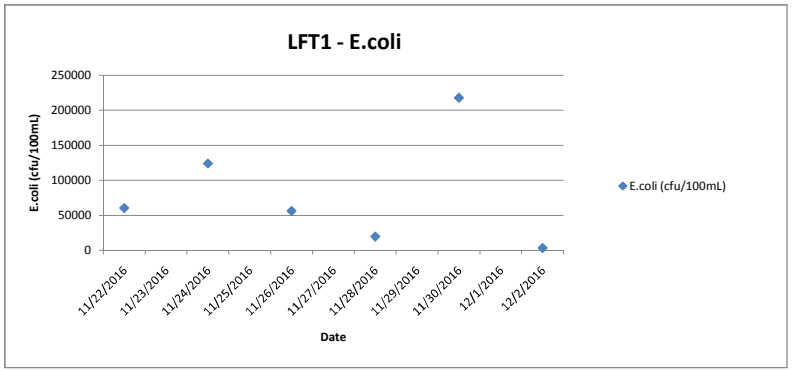

HC3 - Nickel
Ni (µg/L)
Date
Nickel (µg/L)

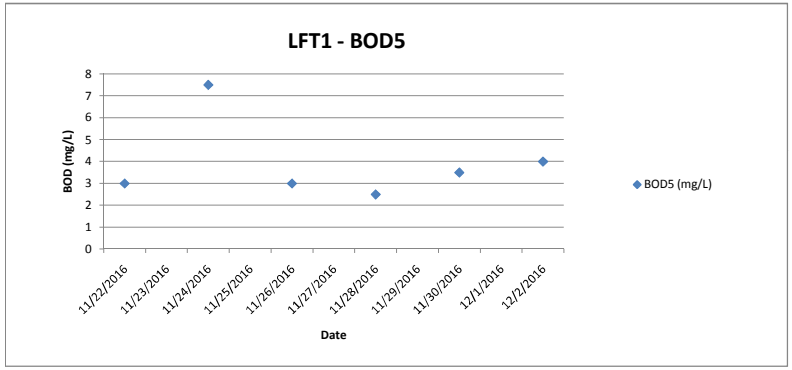

HC3 - Zinc
Zn (µg/L)
Date
Zinc (µg/L)

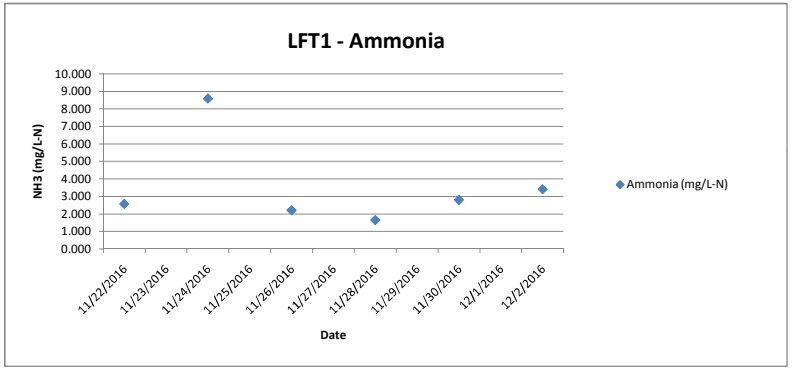

HC3 - Arsenic
As (µg/L)
Date
Arsenic (µg/L)

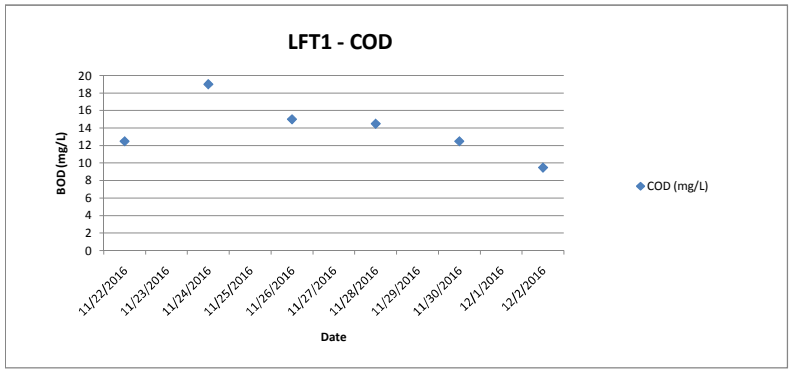

HC3 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

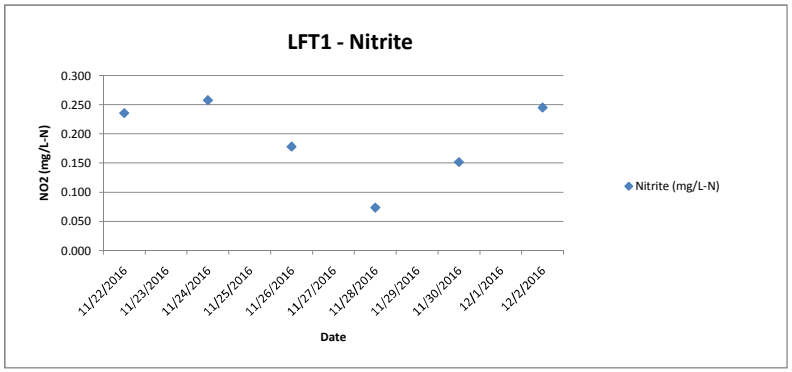

LFT1 - Total Suspended Solids
TSS (mg/L)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

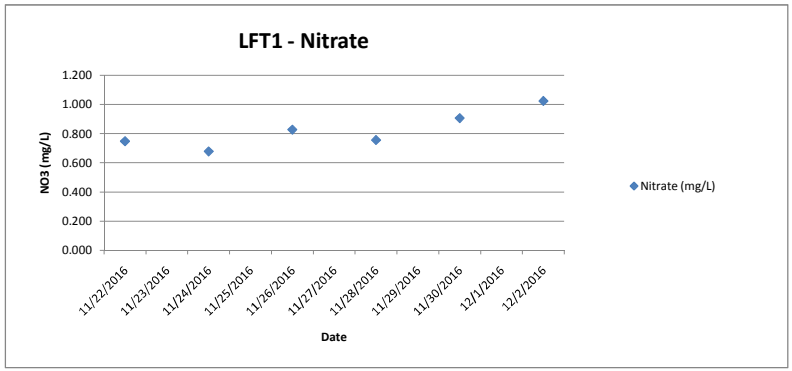

LFT1 - E.coli
E.coli (cfu/100mL)
250000
200000
150000
100000
50000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

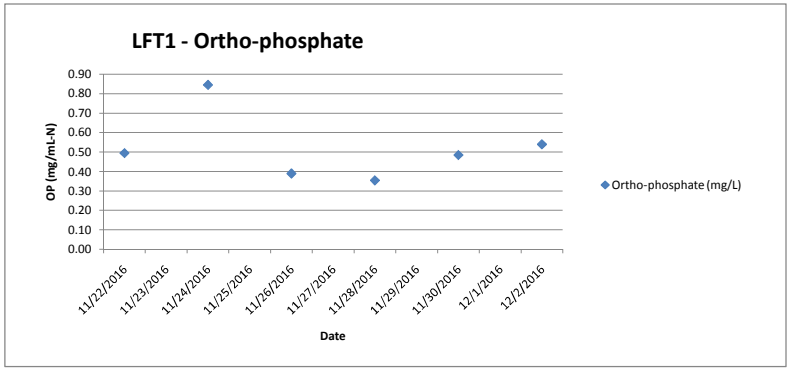

LFT1 - BOD5
BOD (mg/L)
8
7
6
5
4
3
2
1
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

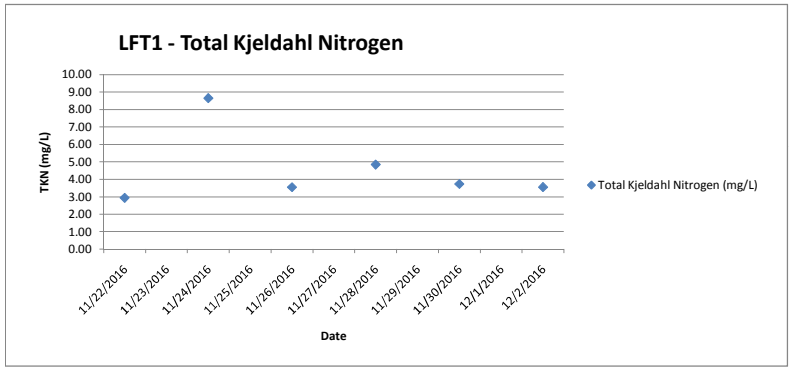

LFT1 - Ammonia
NH3 (mg/L-N)
10.000
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

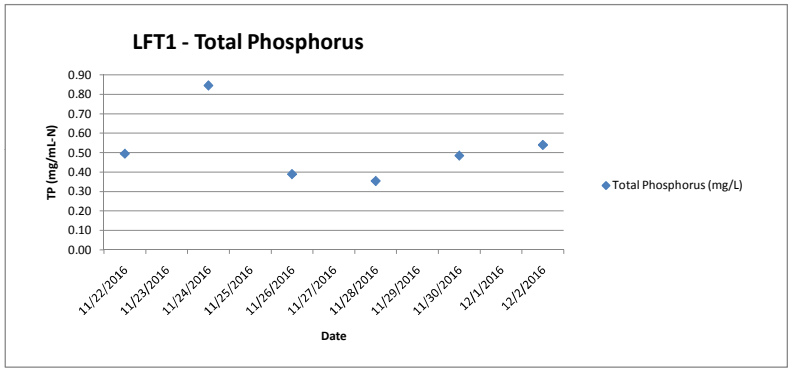

LFT1 - COD
BOD (mg/L)
20
18
16
14
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

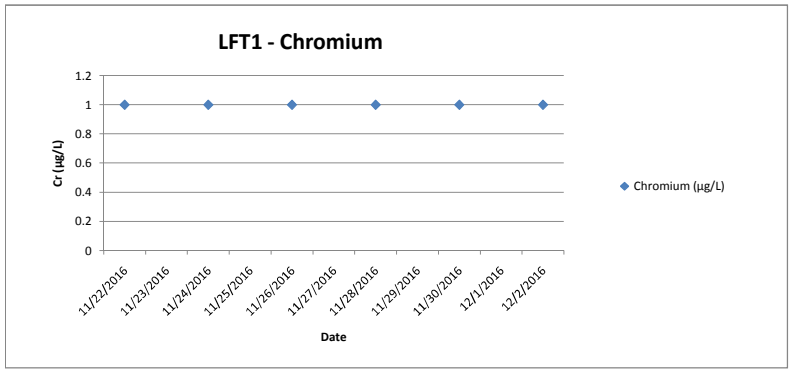

LFT1 - Nitrite
NO2 (mg/L-N)
0.300
0.250
0.200
0.150
0.100
0.050
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

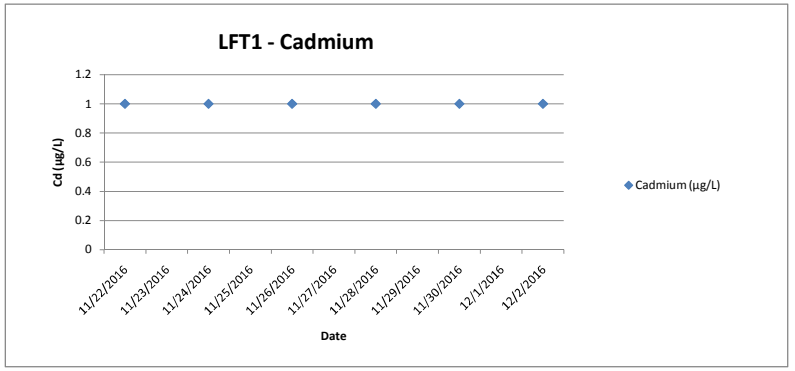

LFT1 - Nitrate
NO3 (mg/L)
1.200
1.000
0.800
0.600
0.400
0.200
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

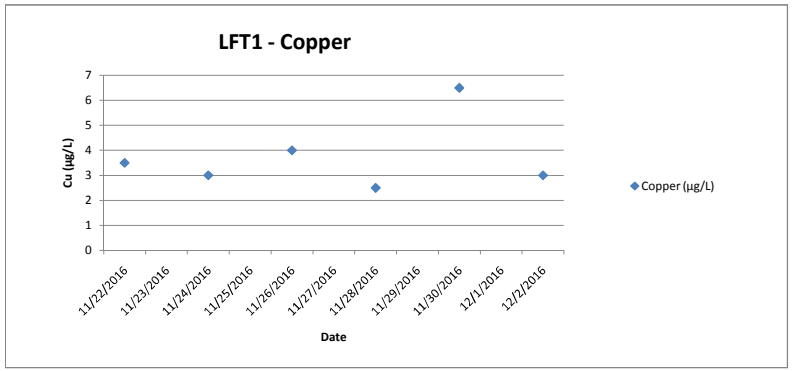

LFT1 - Ortho-phosphate
OP (mg/mL-N)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
11/23/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

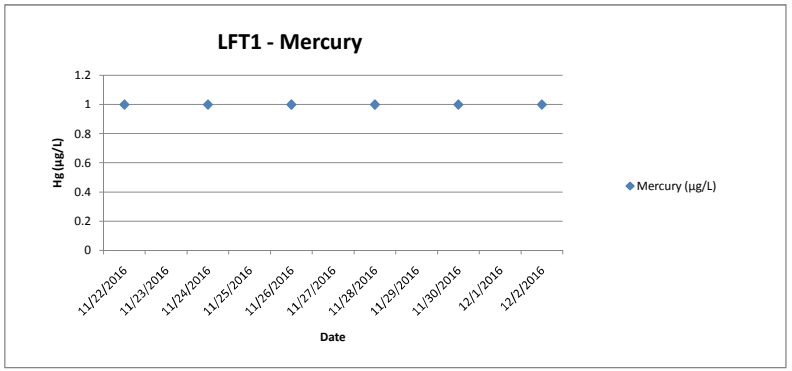

LFT1 - Total Kjeldahl Nitrogen
TKN (mg/L)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

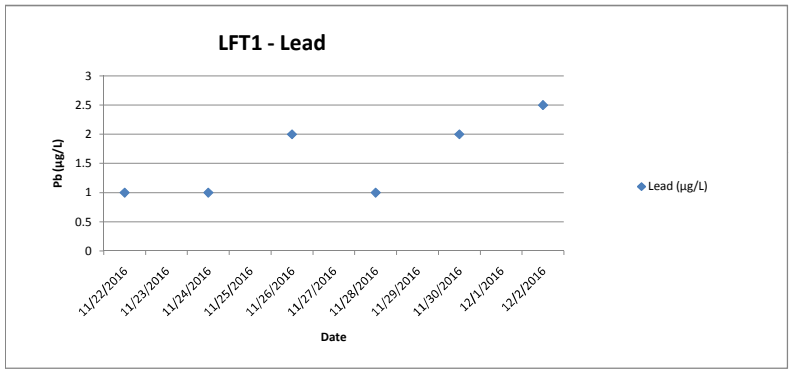

LFT1 - Total Phosphorus
TP (mg/mL-N)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

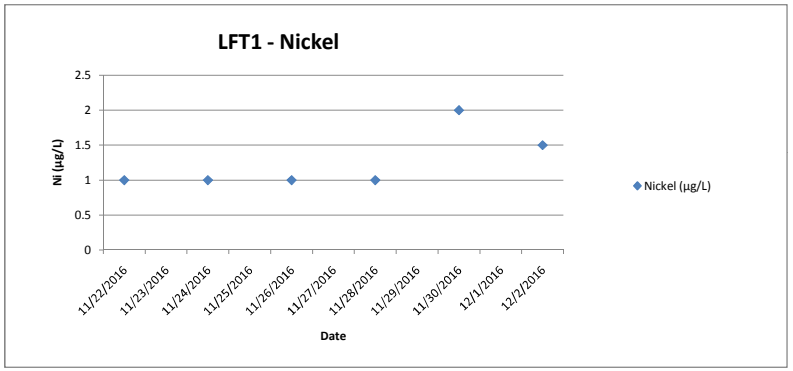

LFT1 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

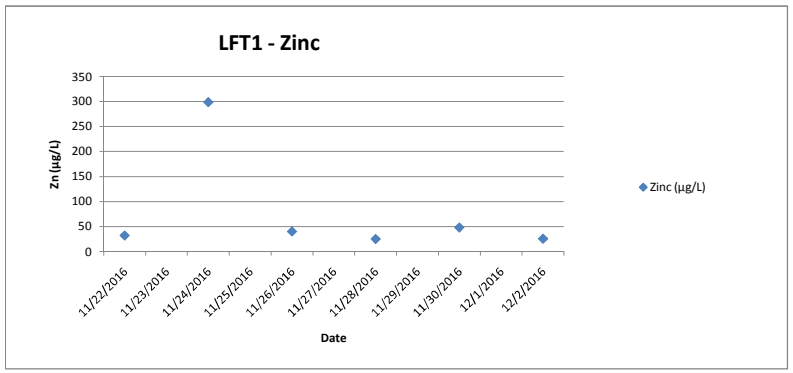

LFT1 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

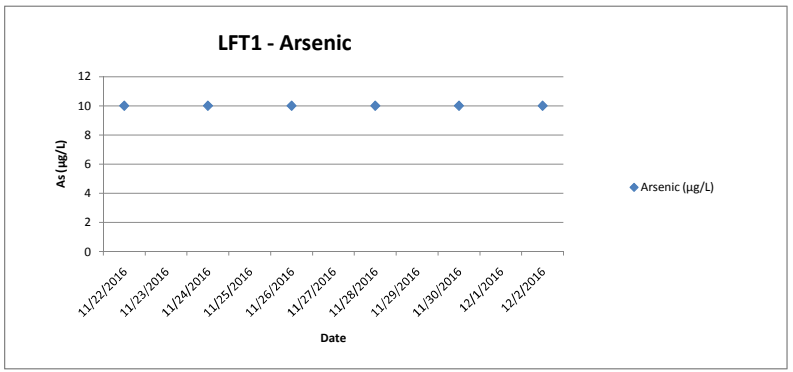

LFT1 - Copper
Cu (µg/L)
0
1
2
3
4
5
6
7
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

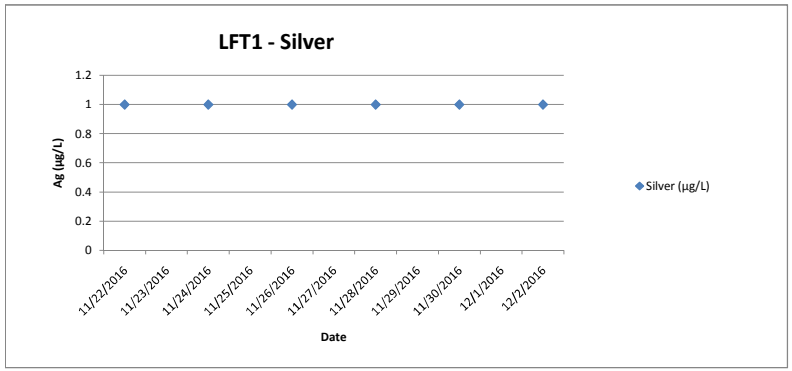

LFT1 - Mercury
Hg (µg/L)
0
0.2
0.4
0.6
0.8
1
1.2
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

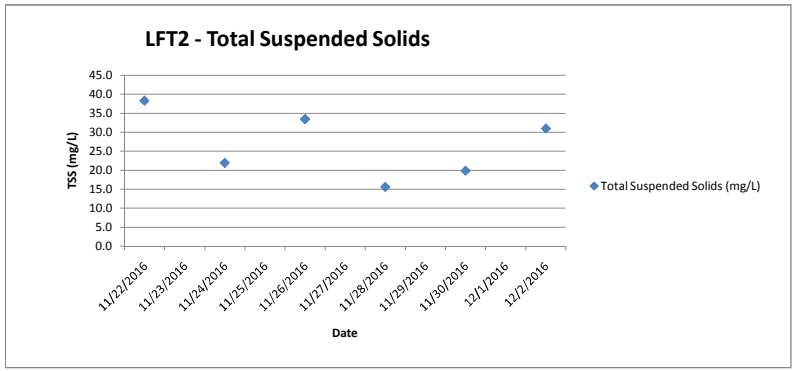

LFT1 - Lead
Pb (µg/L)
0
0.5
1
1.5
2
2.5
3
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

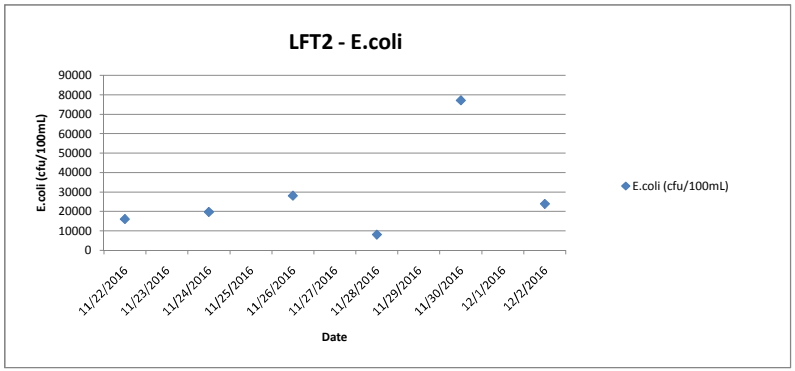

LFT1 - Nickel
Ni (µg/L)
0
0.5
1
1.5
2
2.5
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

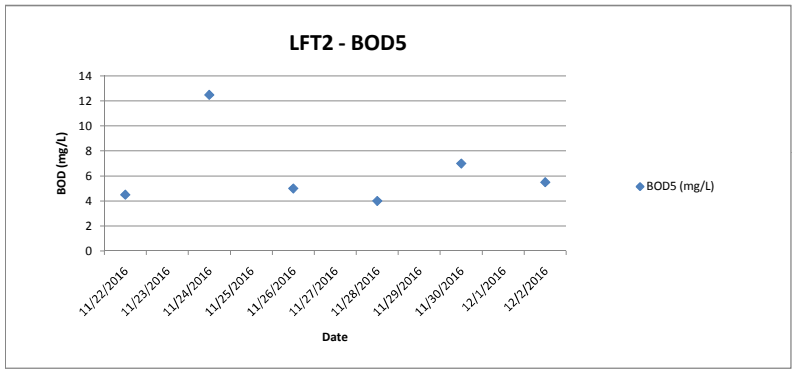

LFT1 - Zinc
Zn (µg/L)
0
50
100
150
200
250
300
350
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

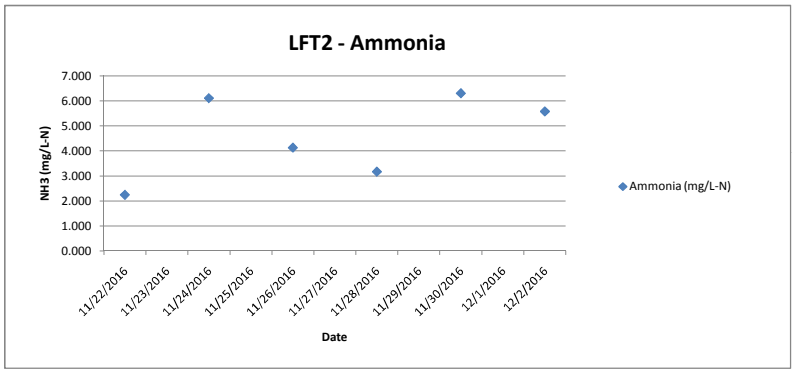

LFT1 - Arsenic
As (µg/L)
0
2
4
6
8
10
12
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

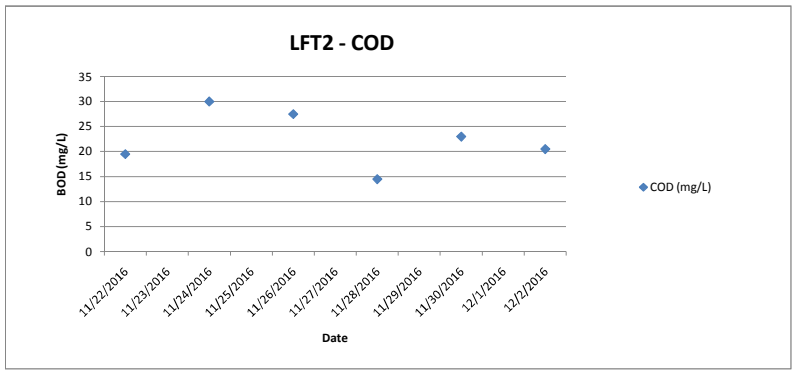

LFT1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

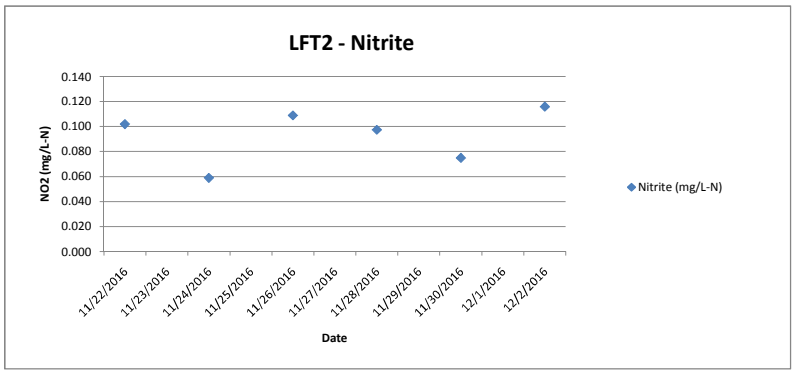

LFT2 - Total Suspended Solids
TSS (mg/L)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

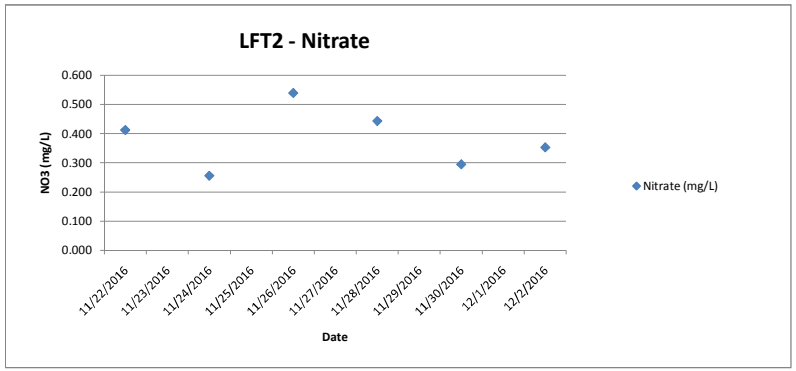

LFT2 - E.coli
E.coli (cfu/100mL)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

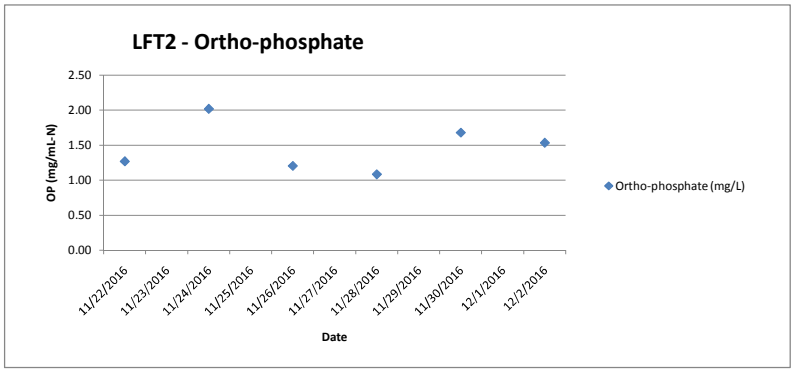

LFT2 - BOD5
BOD (mg/L)
14
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

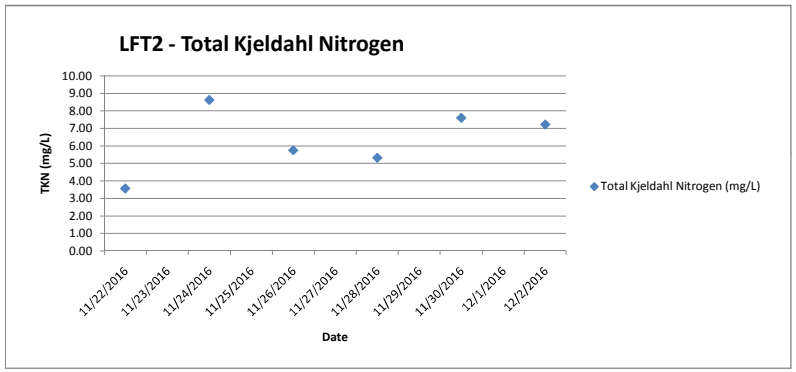

LFT2 - Ammonia
NH3 (mg/L-N)
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

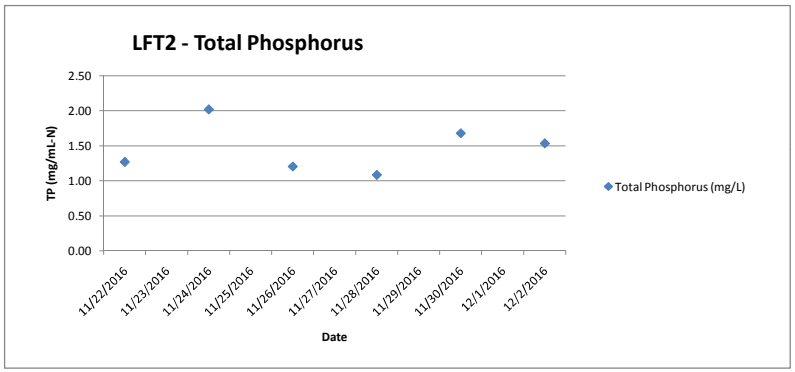

LFT2 - COD
BOD (mg/L)
35
30
25
20
15
10
5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

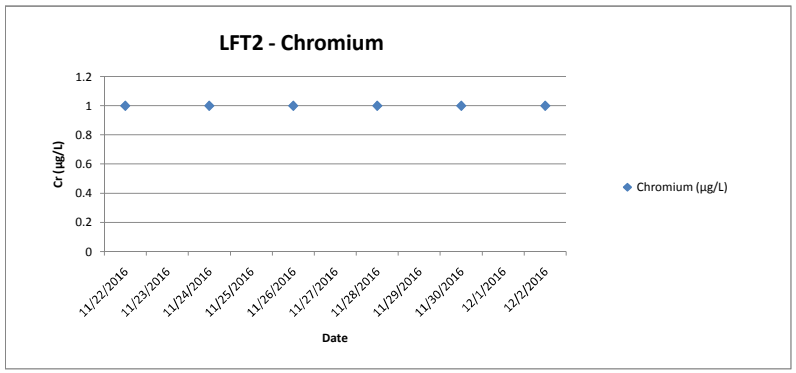

LFT2 - Nitrite
NO2 (mg/L-N)
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

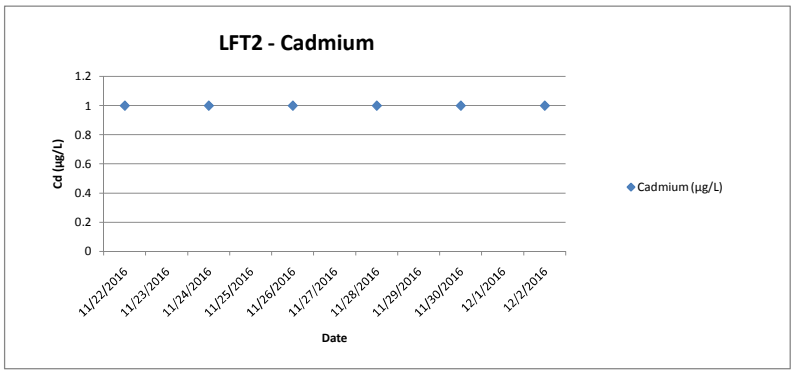

LFT2 - Nitrate
NO3 (mg/L)
0.600
0.500
0.400
0.300
0.200
0.100
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

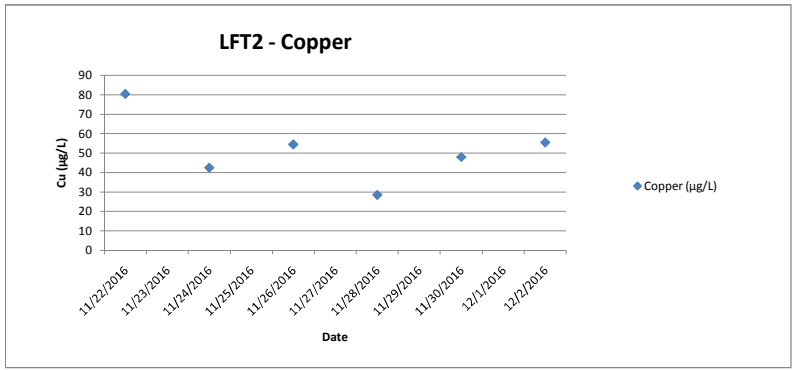

LFT2 - Ortho-phosphate
OP (mg/mL-N)
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

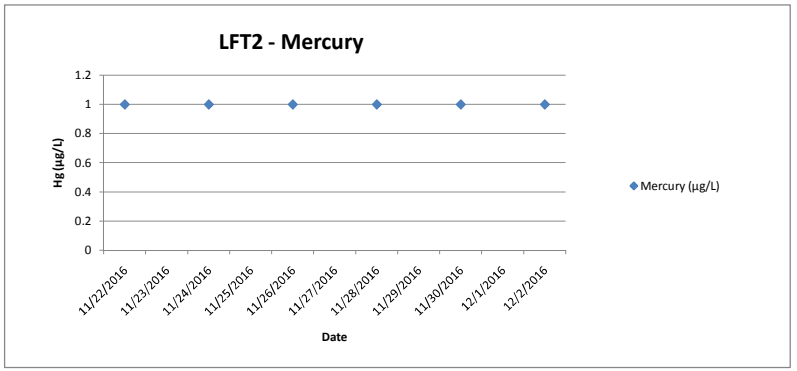

LFT2 - Total Kjeldahl Nitrogen
TKN (mg/L)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

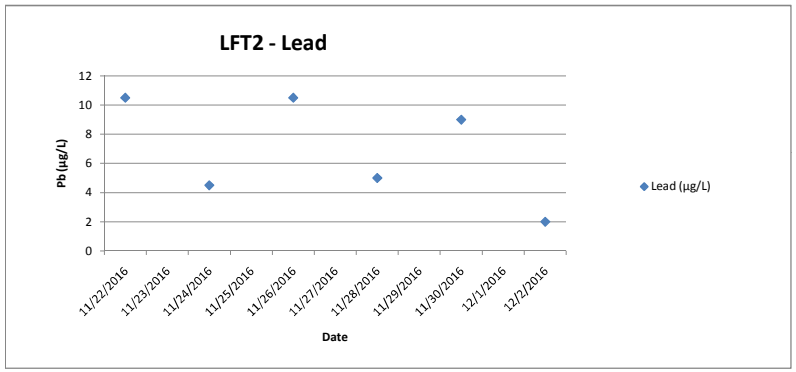

LFT2 - Total Phosphorus
TP (mg/mL-N)
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

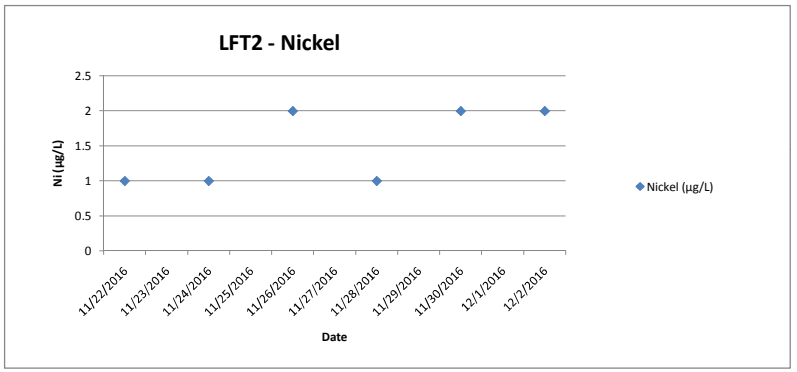

LFT2 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

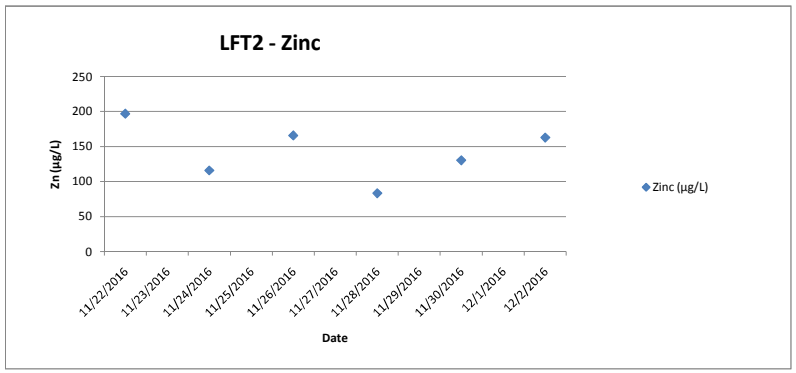

LFT2 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

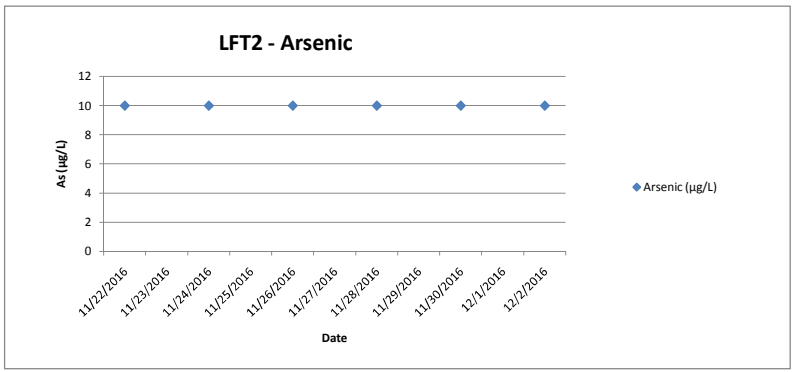

LFT2 - Copper
Cu (µg/L)
90
80
70
60
50
40
30
20
10
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

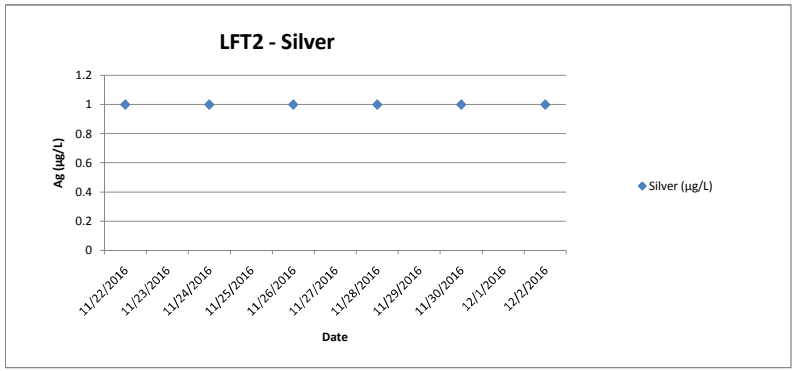

LFT2 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

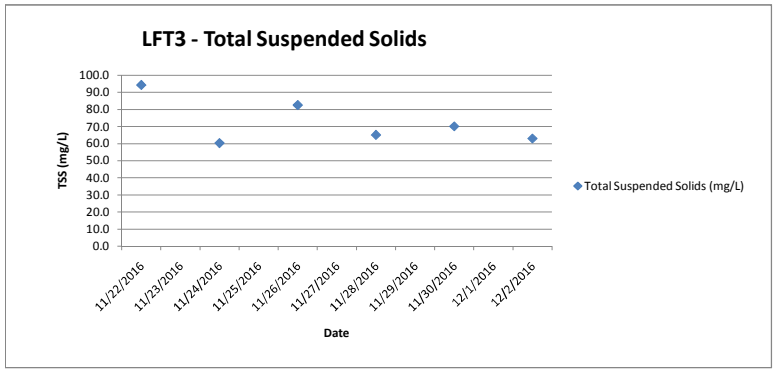

LFT2 - Lead
Pb (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

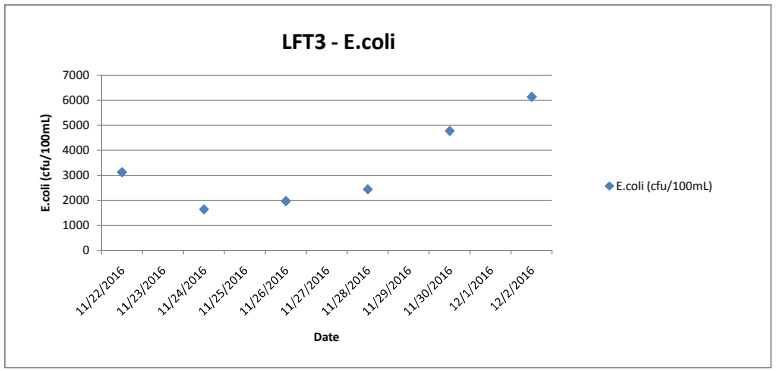

LFT2 - Nickel
Ni (µg/L)
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

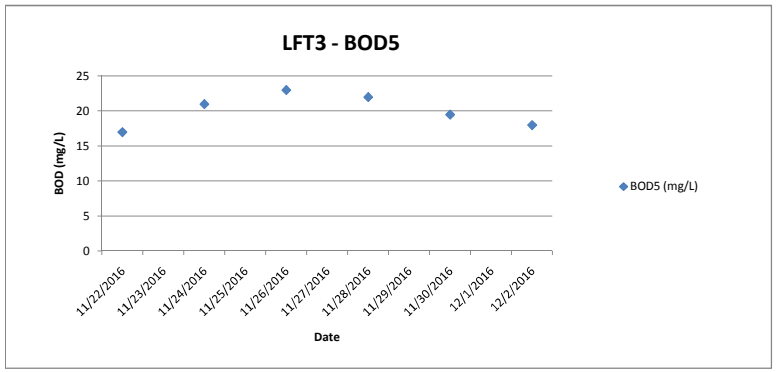

LFT2 - Zinc
Zn (µg/L)
250
200
150
100
50
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

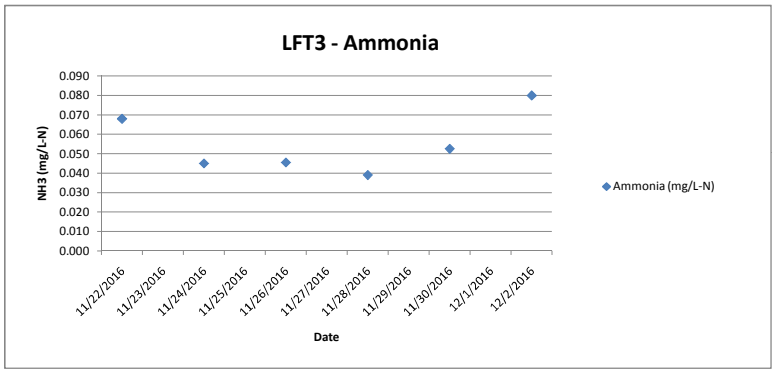

LFT2 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

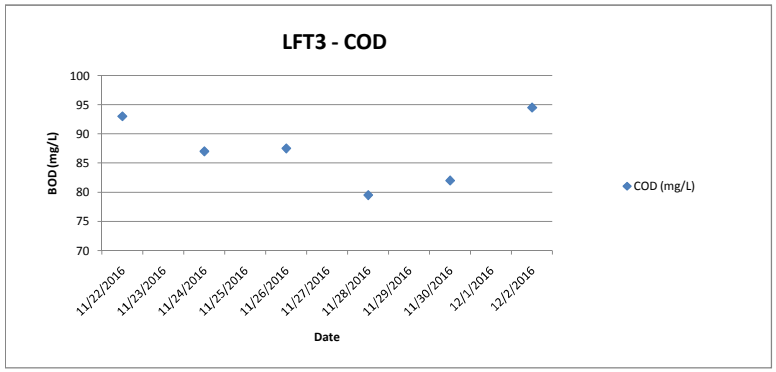

LFT2 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

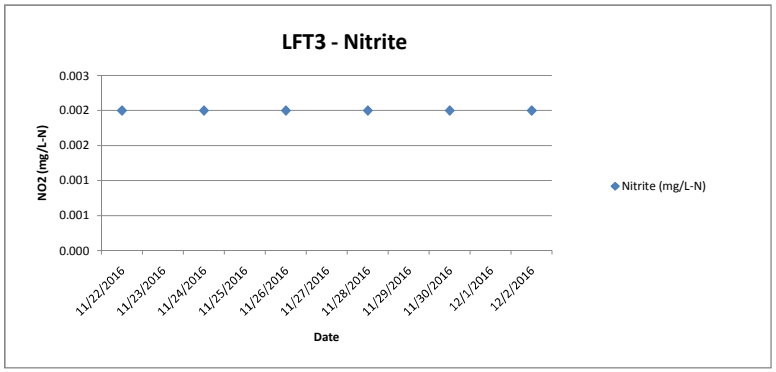

LFT3 - Total Suspended Solids
TSS (mg/L)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

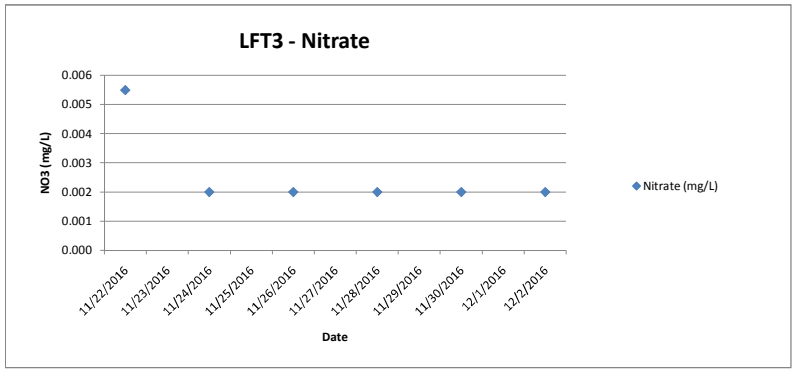

LFT3 - E.coli
E.coli (cfu/100mL)
7000
6000
5000
4000
3000
2000
1000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

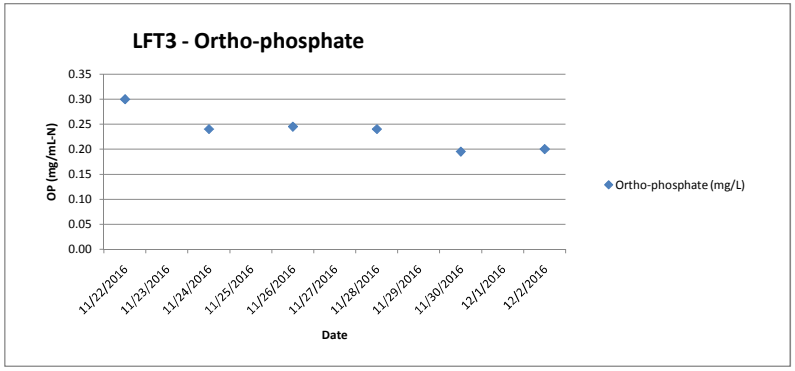

LFT3 - BOD5
BOD (mg/L)
25
20
15
10
5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

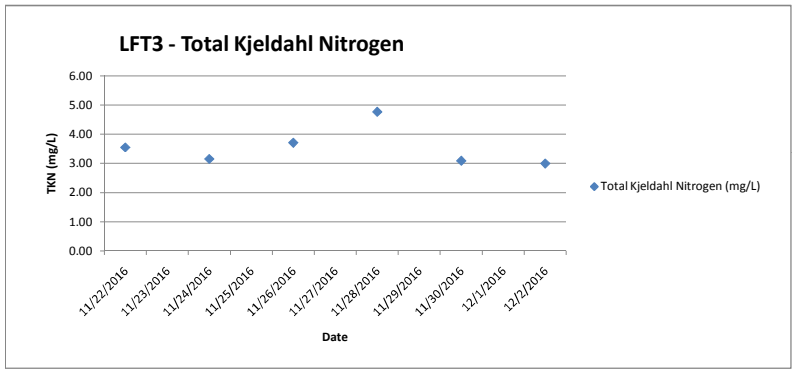

LFT3 - Ammonia
NH3 (mg/L-N)
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

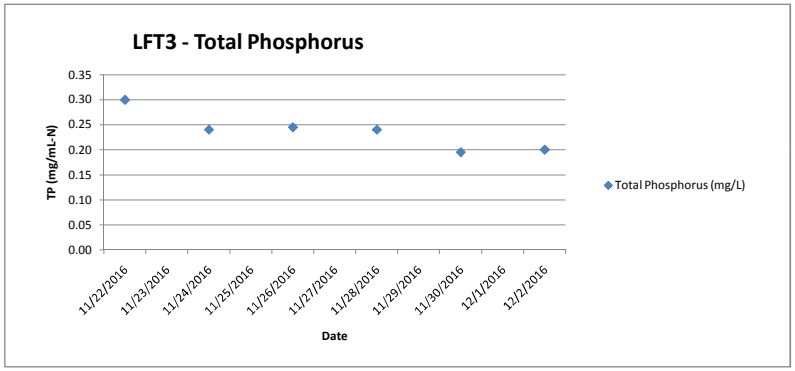

LFT3 - COD
BOD (mg/L)
100
95
90
85
80
75
70
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

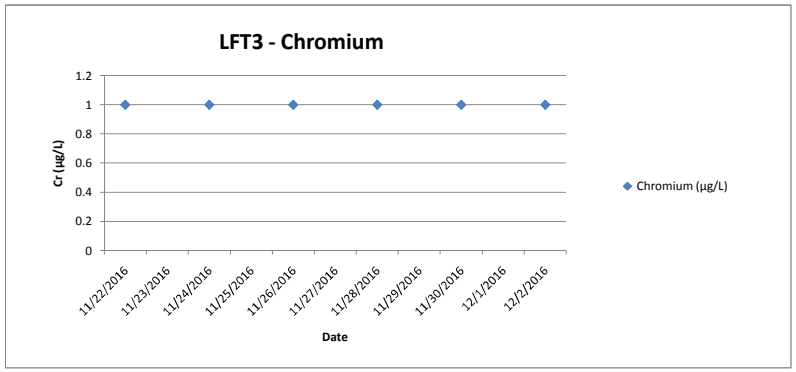

LFT3 - Nitrite
NO2 (mg/L-N)
0.003
0.002
0.002
0.001
0.001
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

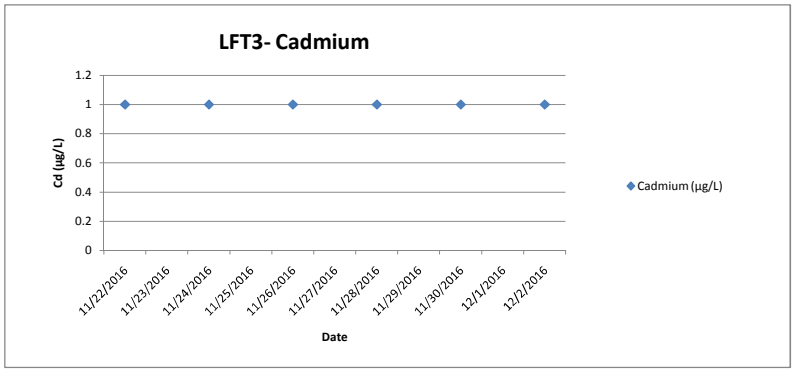

LFT3 - Nitrate
NO3 (mg/L)
0.006
0.005
0.004
0.003
0.002
0.001
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

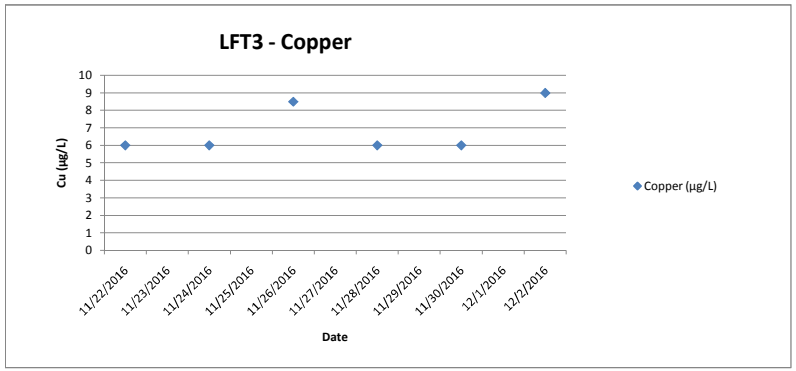

LFT3 - Ortho-phosphate
OP (mg/mL-N)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

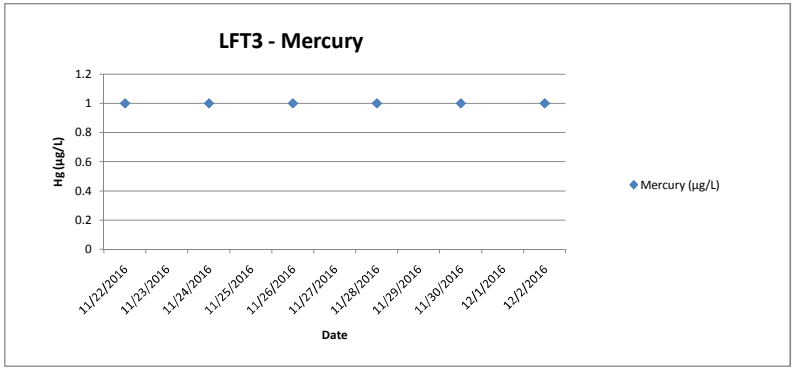

LFT3 - Total Kjeldahl Nitrogen
TKN (mg/L)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

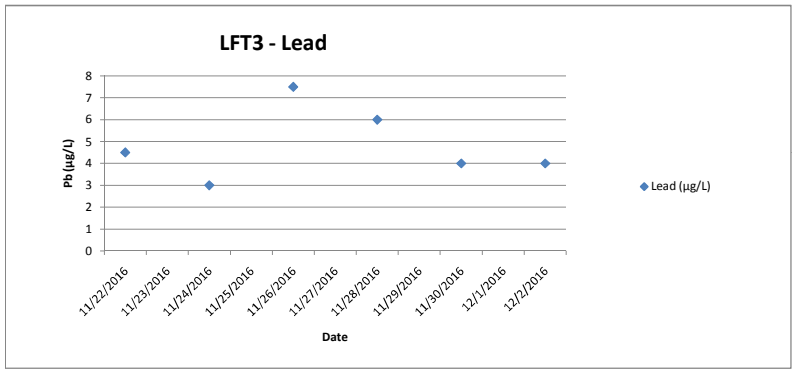

LFT3 - Total Phosphorus
TP (mg/mL-N)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

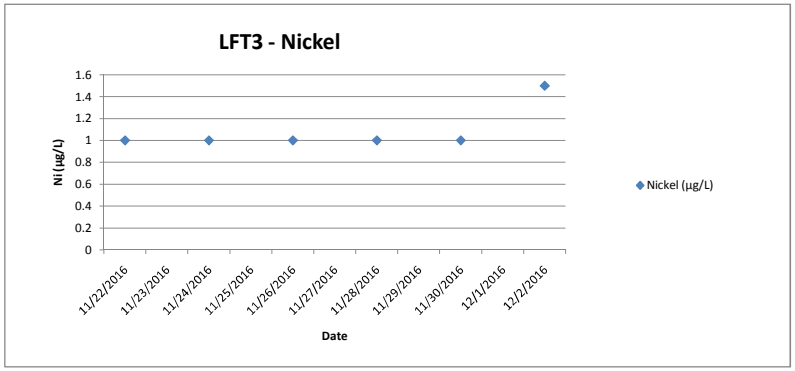

LFT3 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

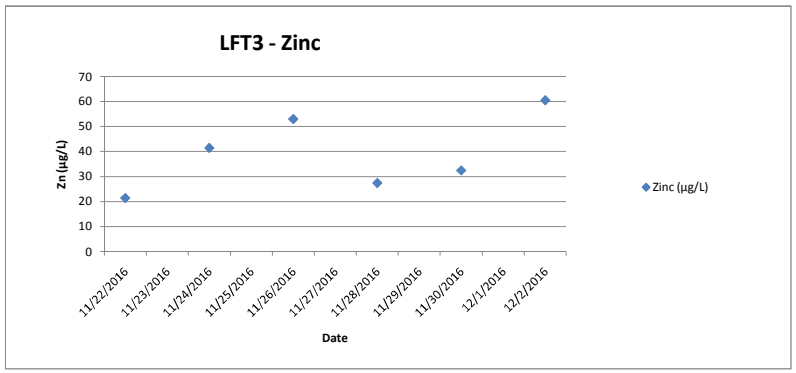

LFT3- Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

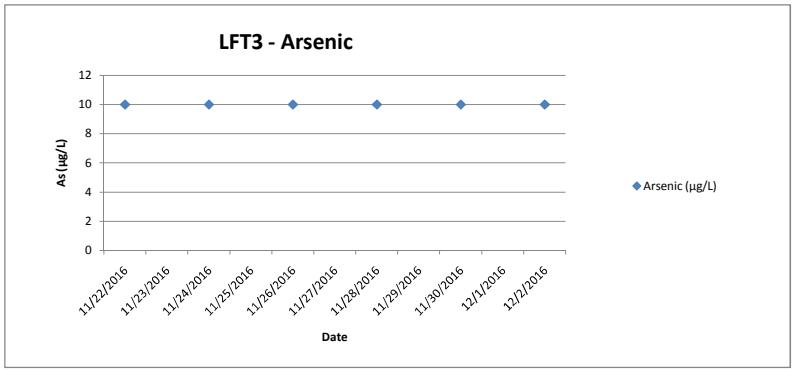

LFT3 - Copper
Cu (µg/L)
Copper (µg/L)
Date

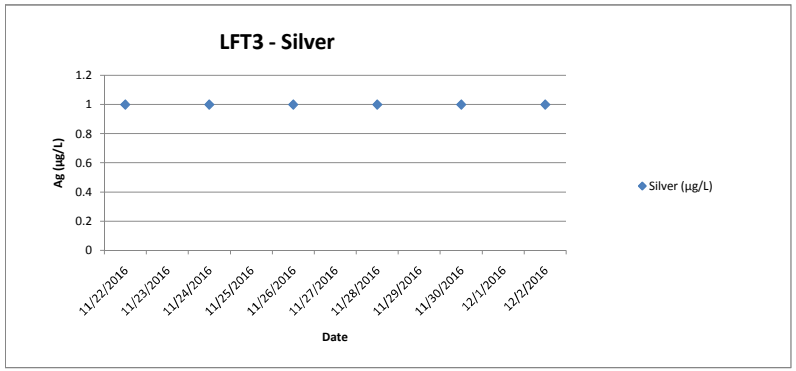

LFT3 - Mercury
Hg (µg/L)
Mercury (µg/L)
Date

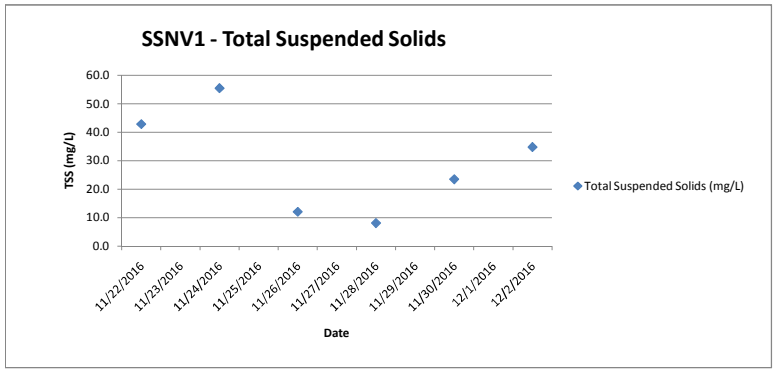

LFT3 - Lead
Pb (µg/L)
Lead (µg/L)
Date

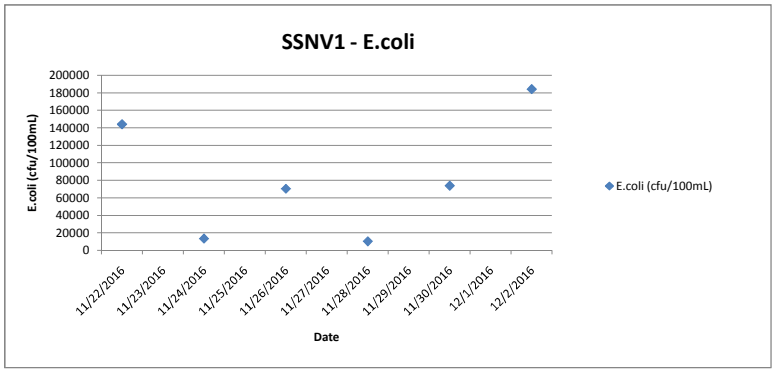

LFT3 - Nickel
Ni (µg/L)
Nickel (µg/L)
Date

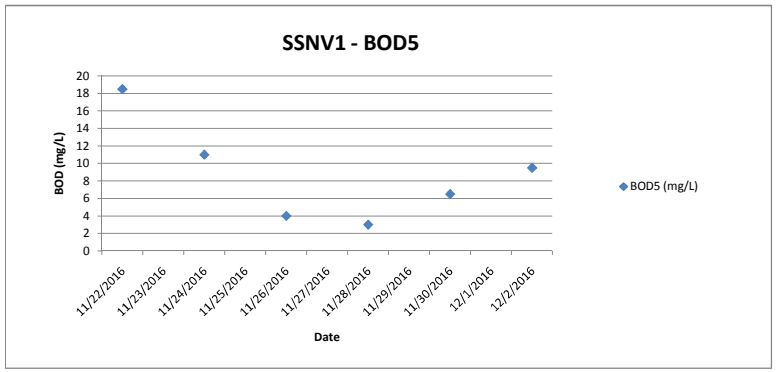

LFT3 - Zinc
Zn (µg/L)
Zinc (µg/L)
Date

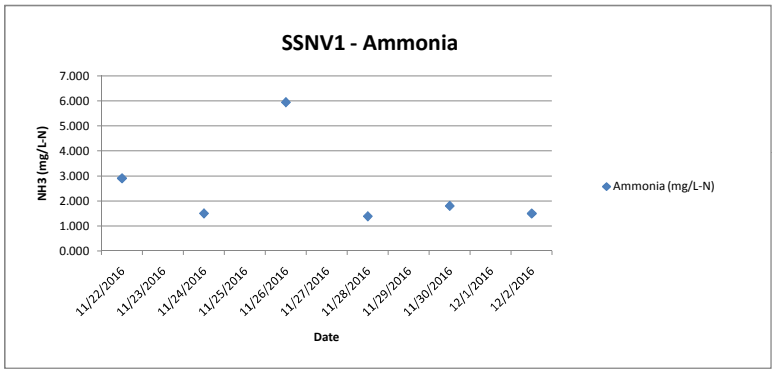

LFT3 - Arsenic
As (µg/L)
Arsenic (µg/L)
Date

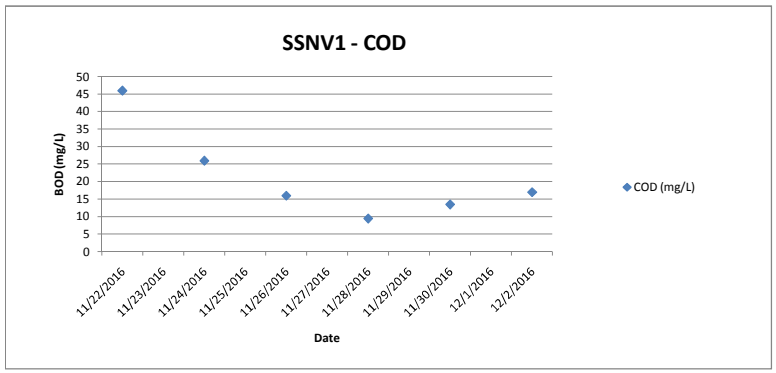

LFT3 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

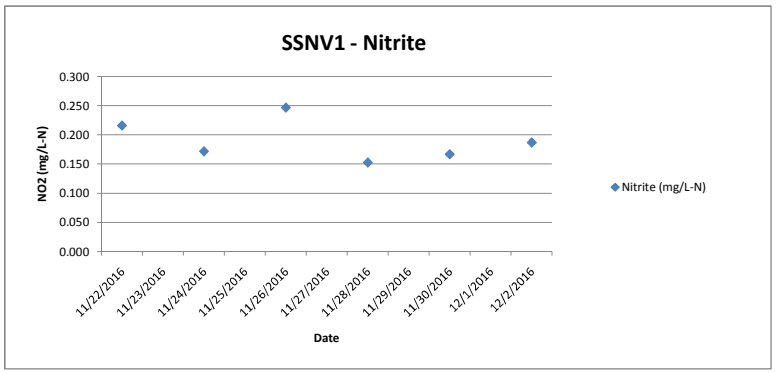

SSNV1 - Total Suspended Solids
TSS (mg/L)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

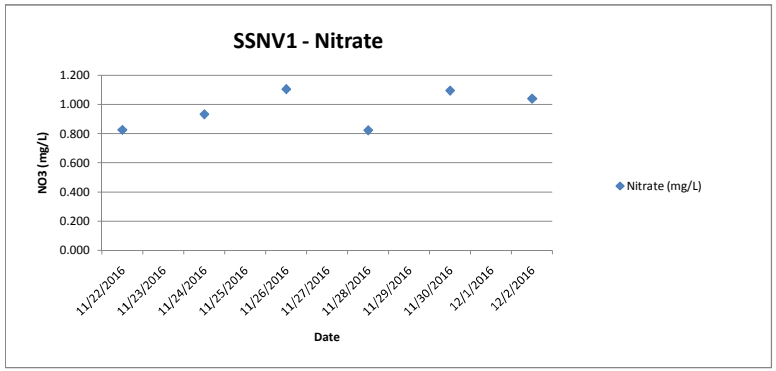

SSNV1 - E.coli
E.coli (cfu/100mL)
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

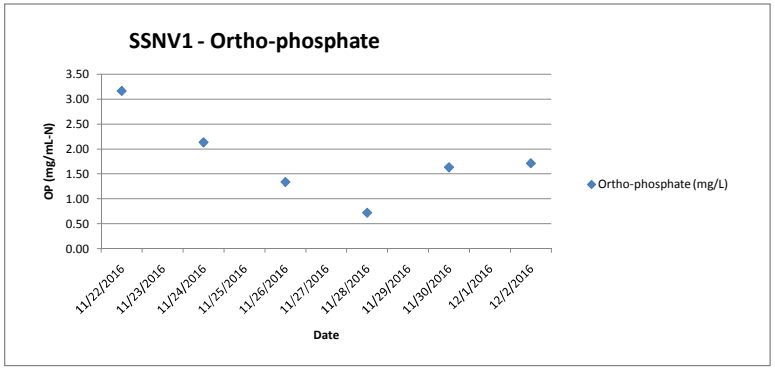

SSNV1 - BOD5
BOD (mg/L)
20
18
16
14
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

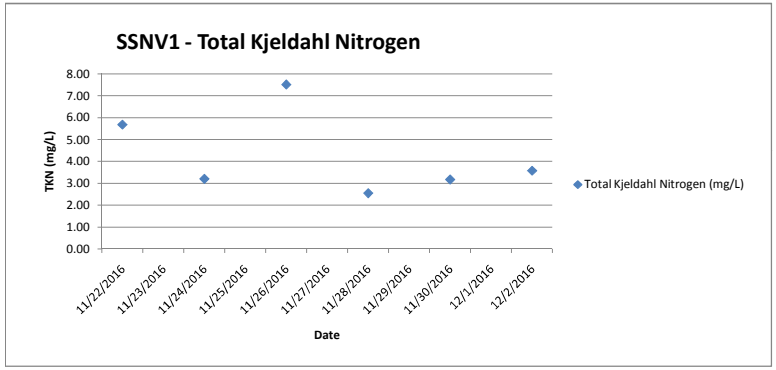

SSNV1 - Ammonia
NH3 (mg/L-N)
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

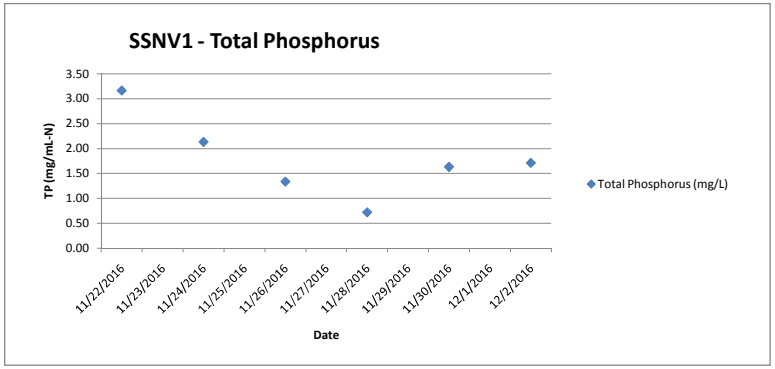

SSNV1 - COD
BOD (mg/L)
50
45
40
35
30
25
20
15
10
5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

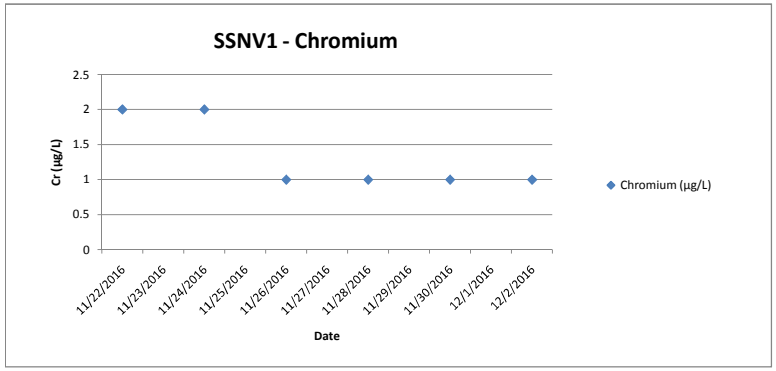

SSNV1 - Nitrite
NO2 (mg/L-N)
0.300
0.250
0.200
0.150
0.100
0.050
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

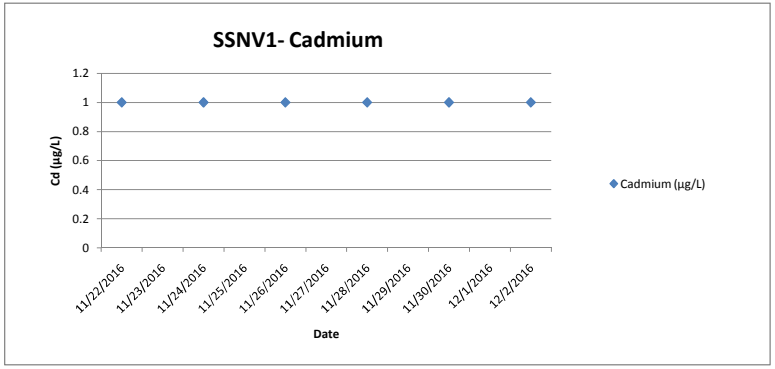

SSNV1 - Nitrate
NO3 (mg/L)
1.200
1.000
0.800
0.600
0.400
0.200
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

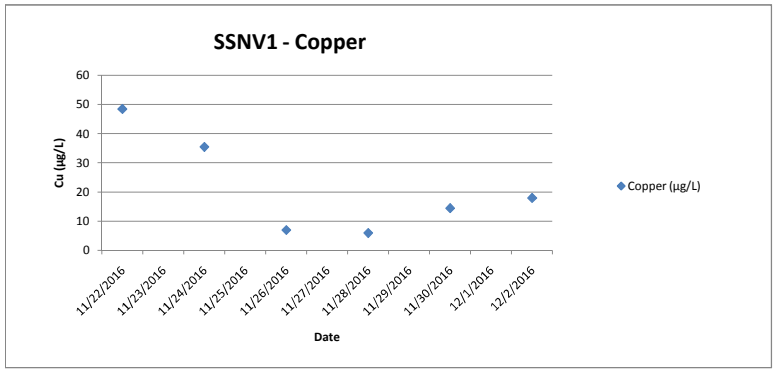

SSNV1 - Ortho-phosphate
OP (mg/mL-N)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

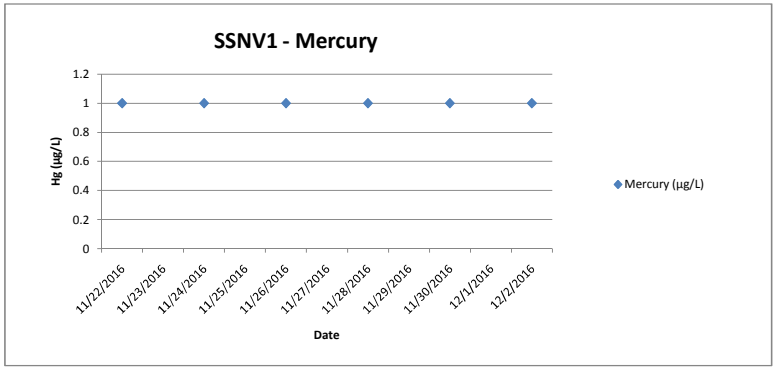

SSNV1 - Total Kjeldahl Nitrogen
TKN (mg/L)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

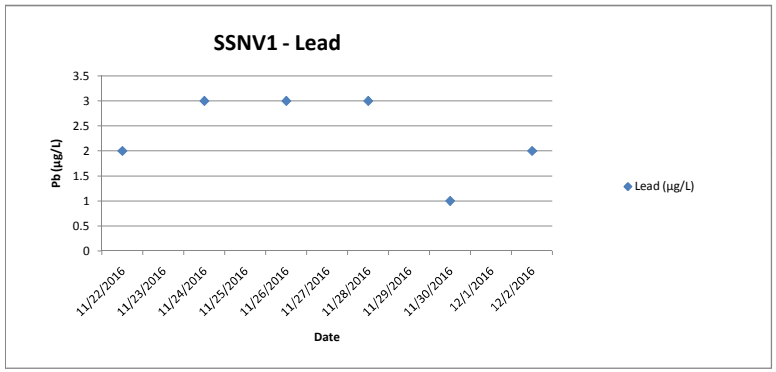

SSNV1 - Total Phosphorus
TP (mg/mL-N)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

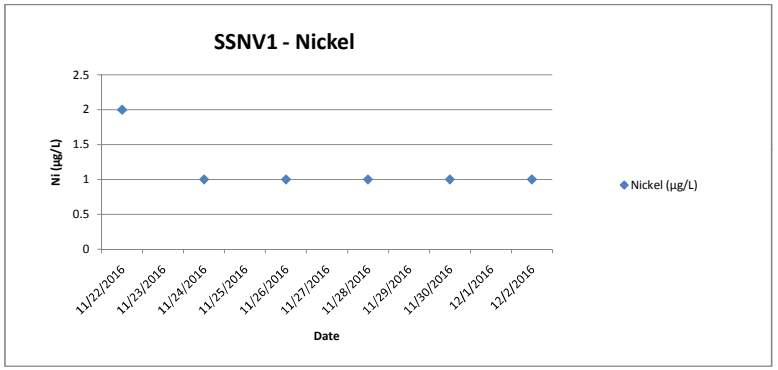

SSNV1 - Chromium
Cr (µg/L)
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

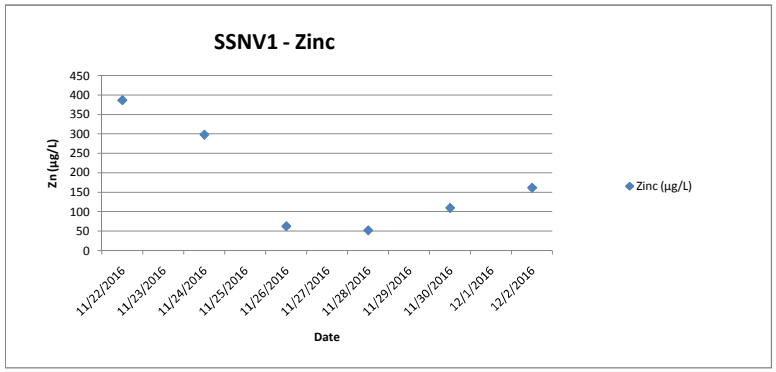

SSNV1- Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

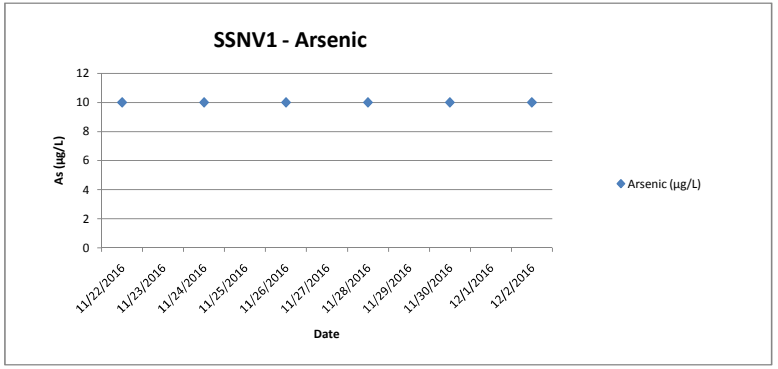

SSNV1 - Copper
Cu (µg/L)
60
50
40
30
20
10
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

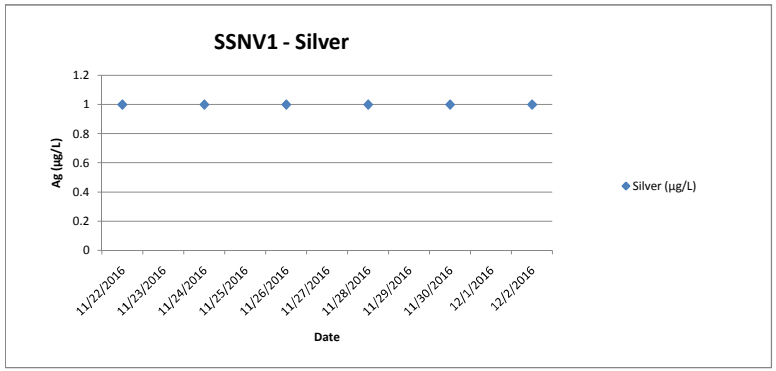

SSNV1 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

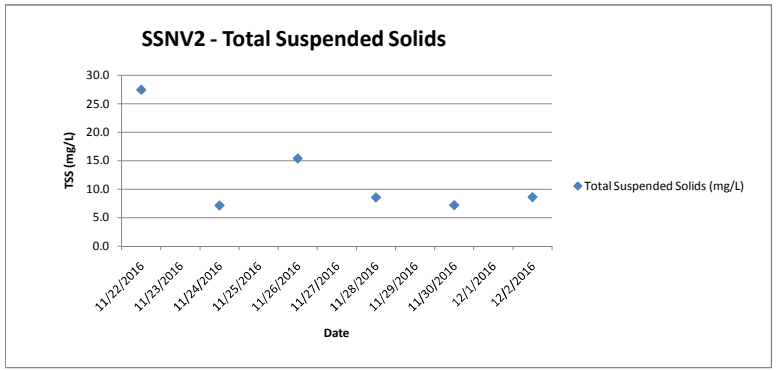

SSNV1 - Lead
Pb (µg/L)
3.5
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

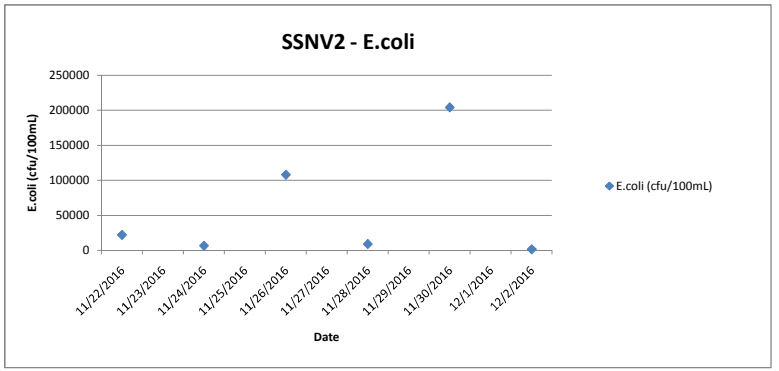

SSNV1 - Nickel
Ni (µg/L)
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

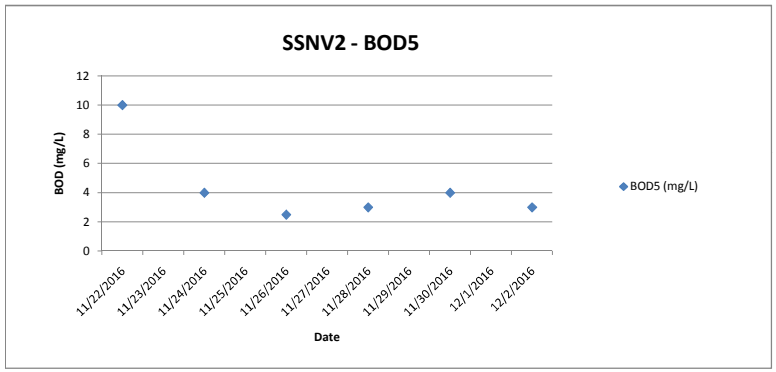

SSNV1 - Zinc
Zn (µg/L)
450
400
350
300
250
200
150
100
50
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

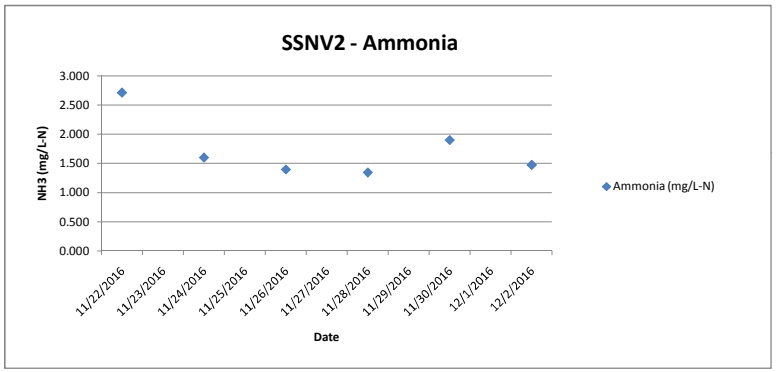

SSNV1 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

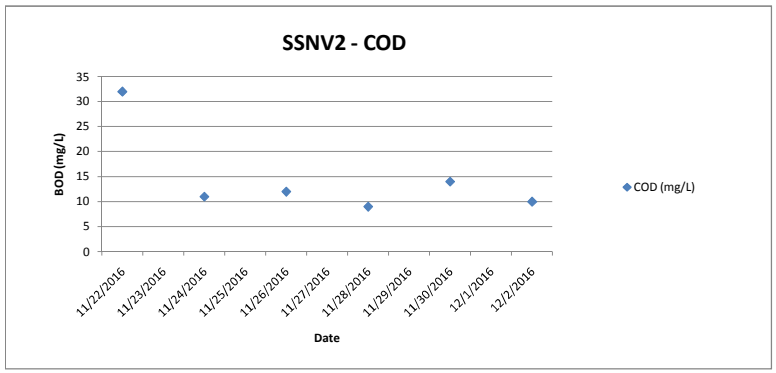

SSNV1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

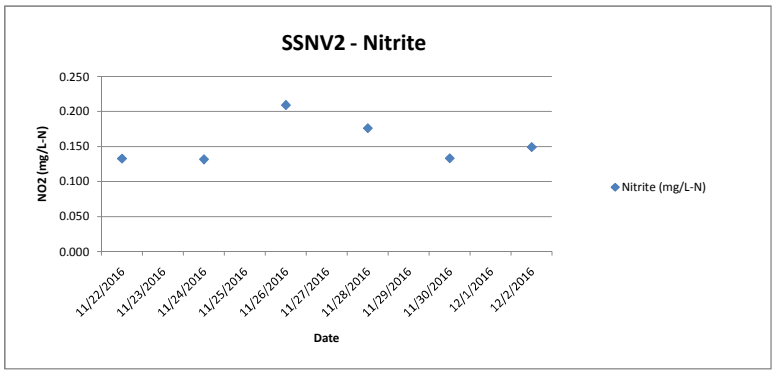

SSNV2 - Total Suspended Solids
TSS (mg/L)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

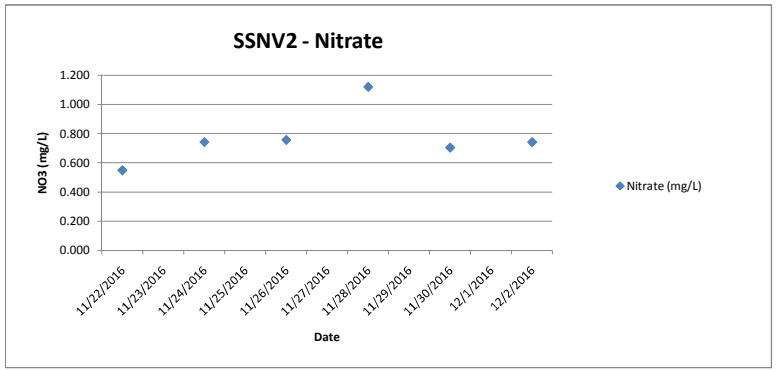

SSNV2 - E.coli
E.coli (cfu/100mL)
250000
200000
150000
100000
50000
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

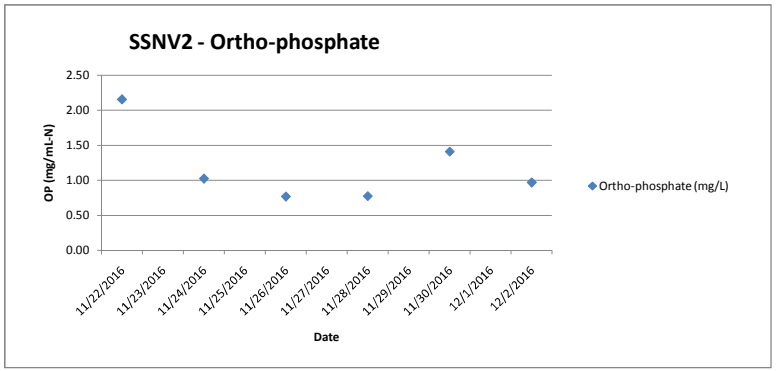

SSNV2 - BOD5
BOD (mg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

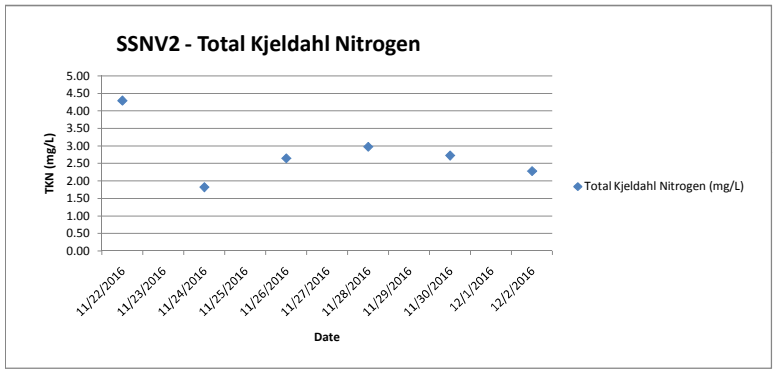

SSNV2 - Ammonia
NH3 (mg/L-N)
3.000
2.500
2.000
1.500
1.000
0.500
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

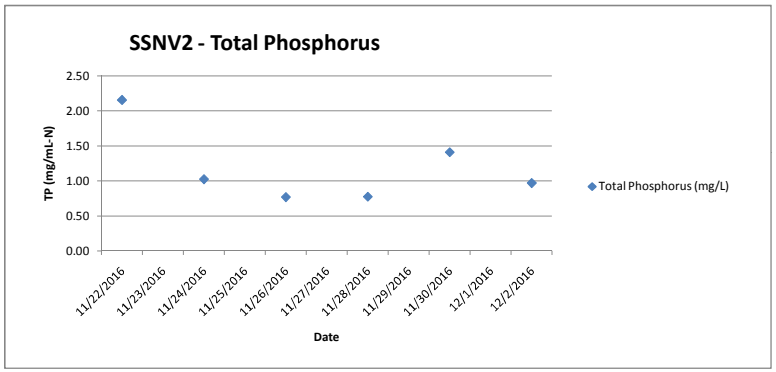

SSNV2 - COD
BOD (mg/L)
35
30
25
20
15
10
5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

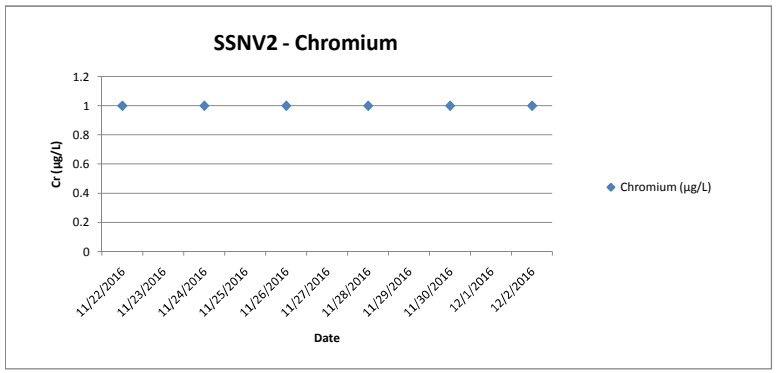

SSNV2 - Nitrite
NO2 (mg/L-N)
0.250
0.200
0.150
0.100
0.050
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

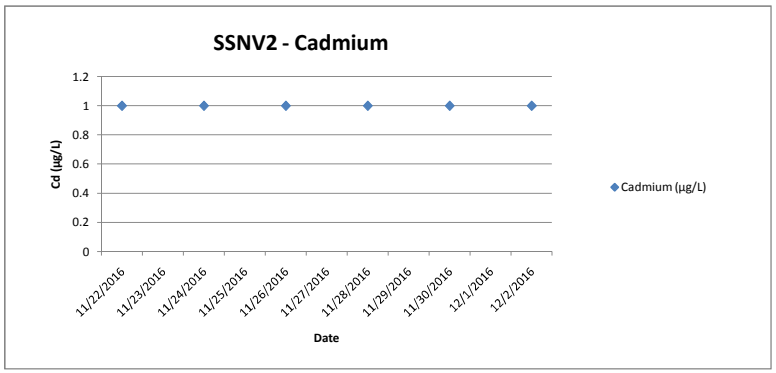

SSNV2 - Nitrate
NO3 (mg/L)
1.200
1.000
0.800
0.600
0.400
0.200
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

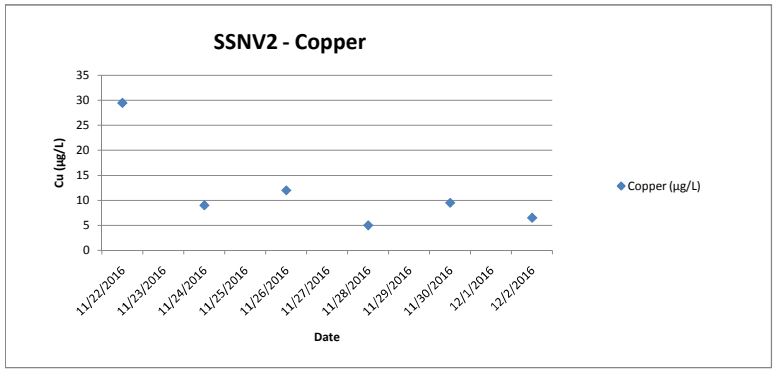

SSNV2 - Ortho-phosphate
OP (mg/mL-N)
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

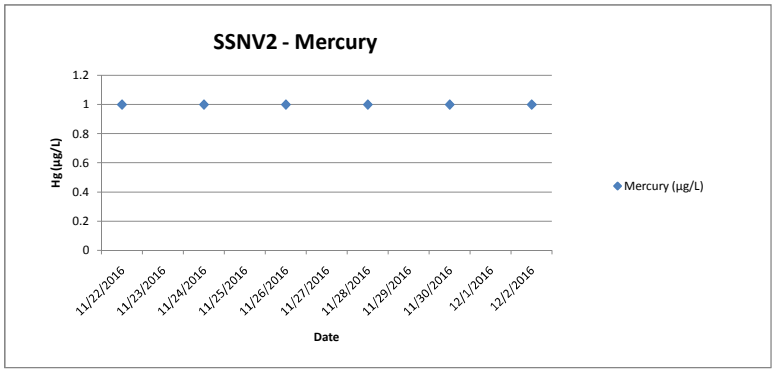

SSNV2 - Total Kjeldahl Nitrogen
TKN (mg/L)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

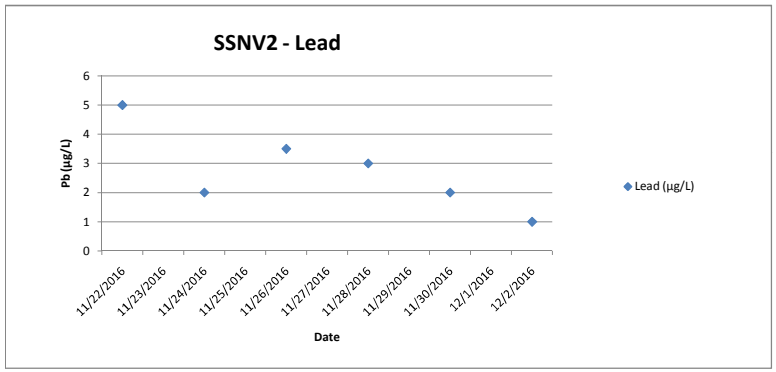

SSNV2 - Total Phosphorus
TP (mg/mL-N)
2.50
2.00
1.50
1.00
0.50
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

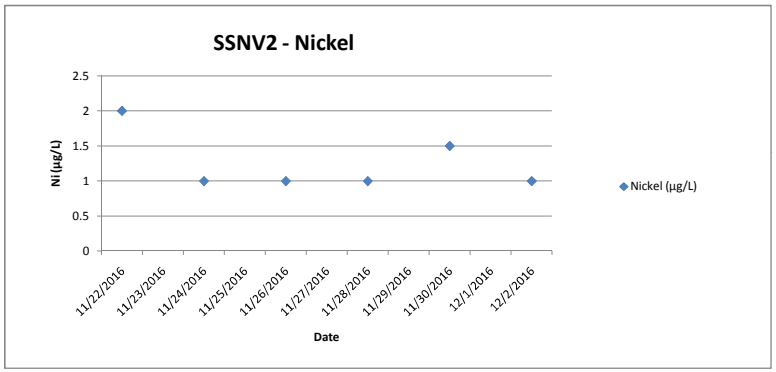

SSNV2 - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

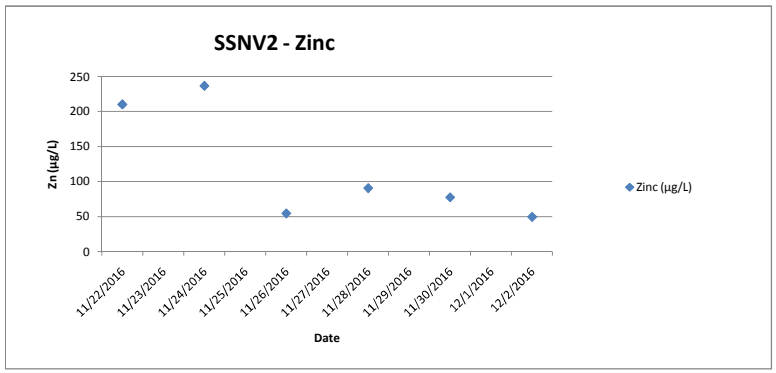

SSNV2 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

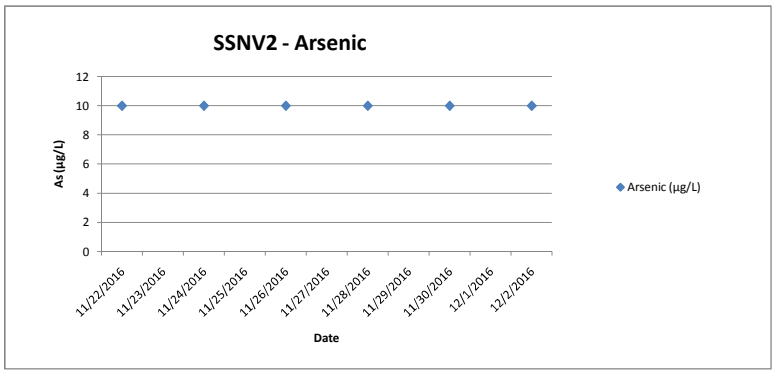

SSNV2 - Copper
Cu (µg/L)
35
30
25
20
15
10
5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

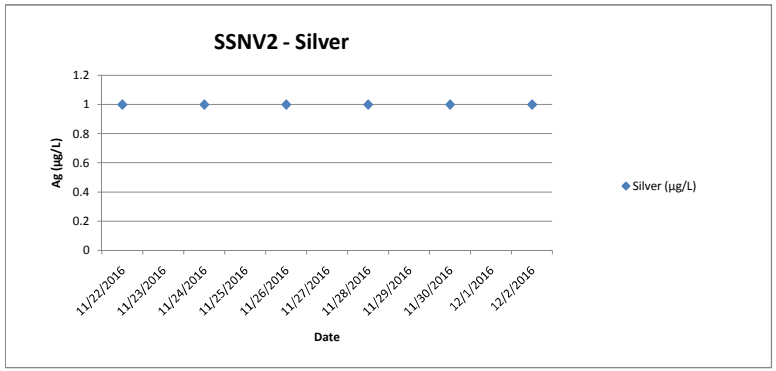

SSNV2 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

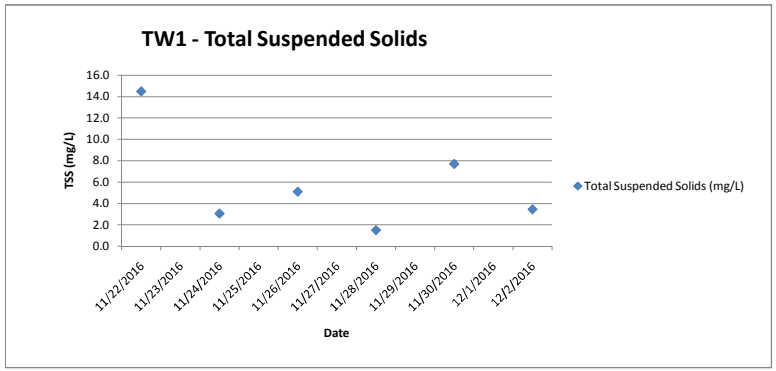

SSNV2 - Lead
Pb (µg/L)
6
5
4
3
2
1
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

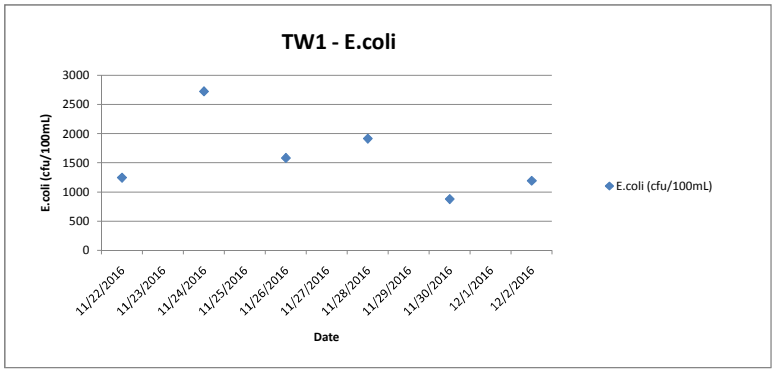

SSNV2 - Nickel
Ni (µg/L)
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

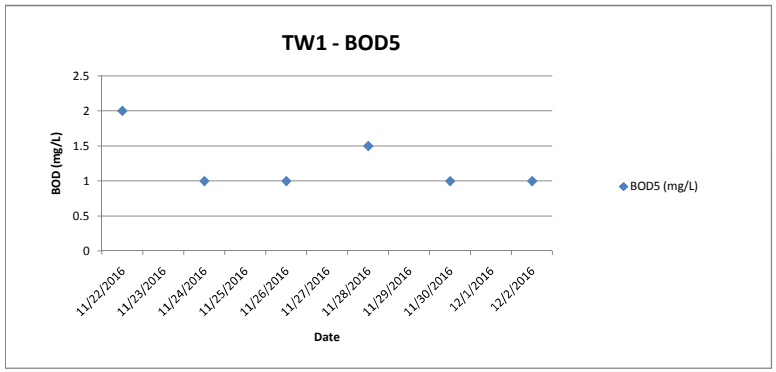

SSNV2 - Zinc
Zn (µg/L)
250
200
150
100
50
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

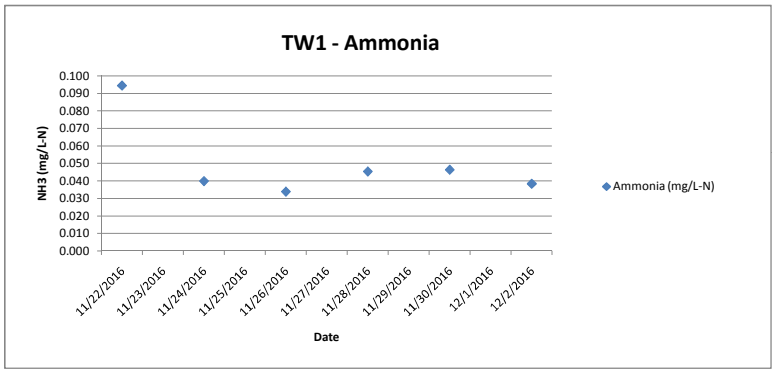

SSNV2 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

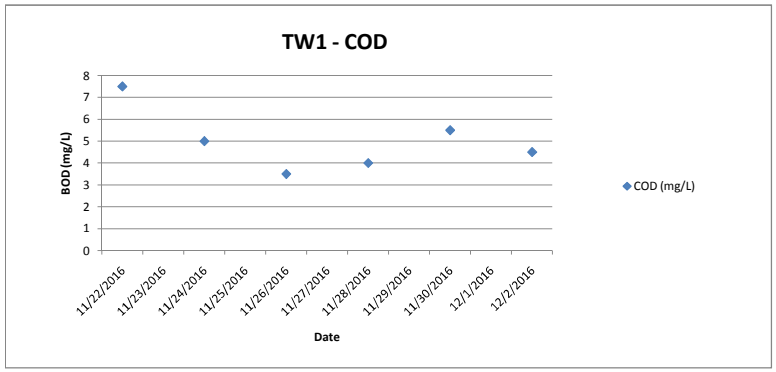

SSNV2 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

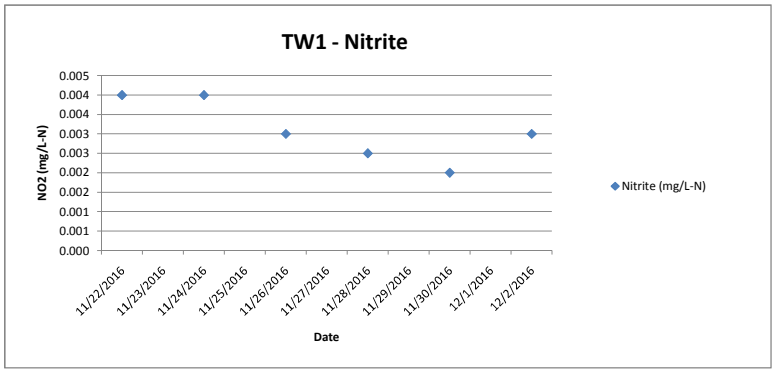

TW1 - Total Suspended Solids
TSS (mg/L)
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

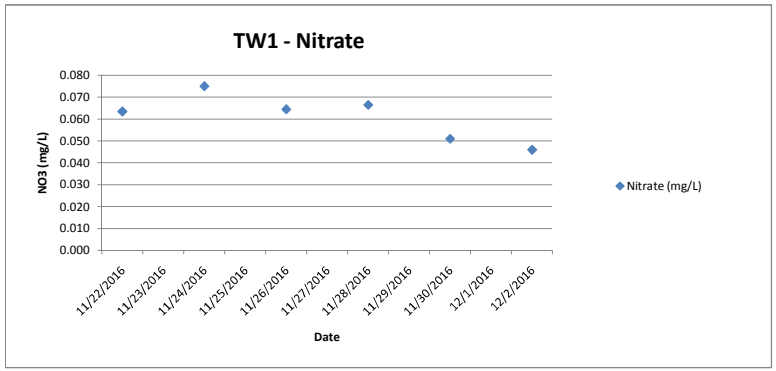

TW1 - E.coli
E.coli (cfu/100mL)
3000
2500
2000
1500
1000
500
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

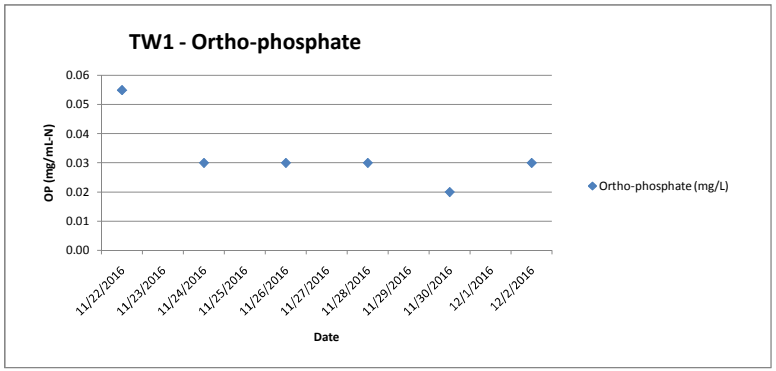

TW1 - BOD5
BOD (mg/L)
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

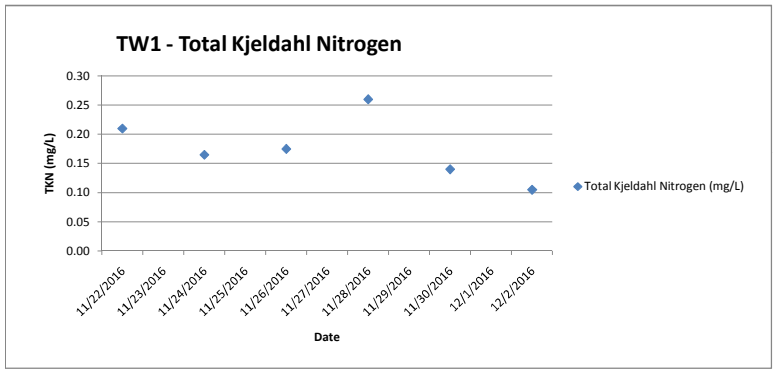

TW1 - Ammonia
NH3 (mg/L-N)
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

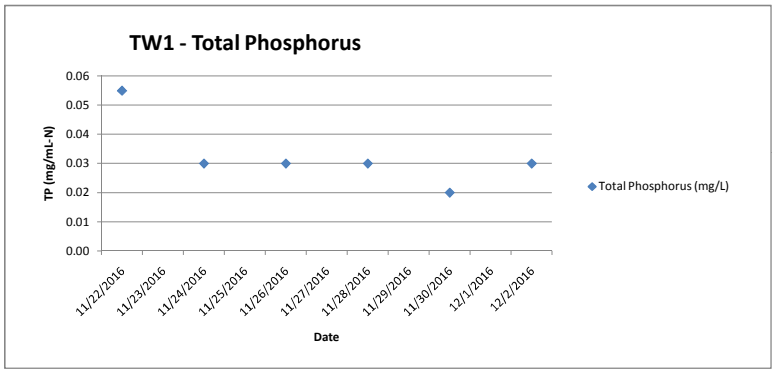

TW1 - COD
BOD (mg/L)
8
7
6
5
4
3
2
1
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

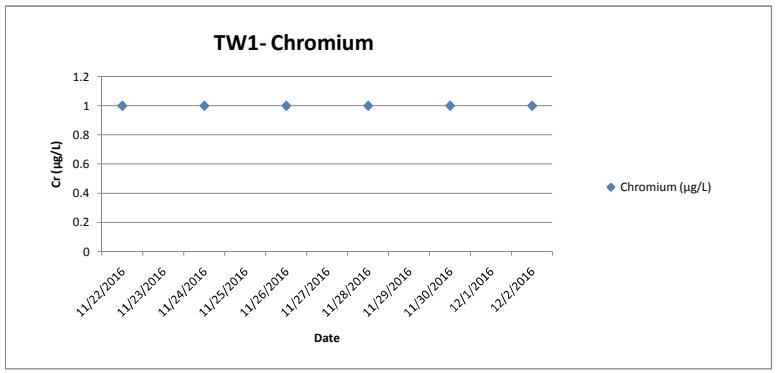

TW1 - Nitrite
NO2 (mg/L-N)
0.005
0.004
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

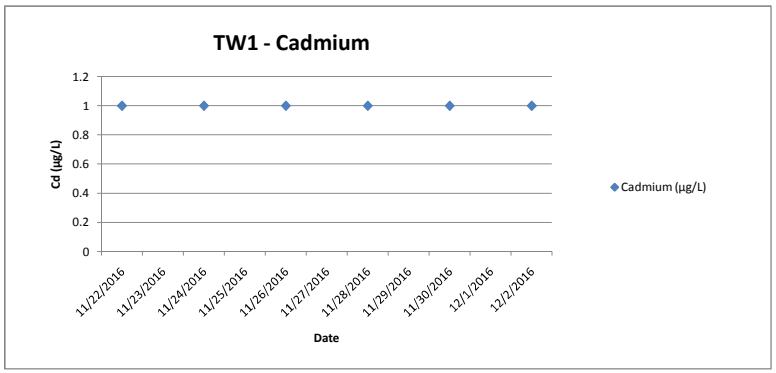

TW1 - Nitrate
NO3 (mg/L)
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

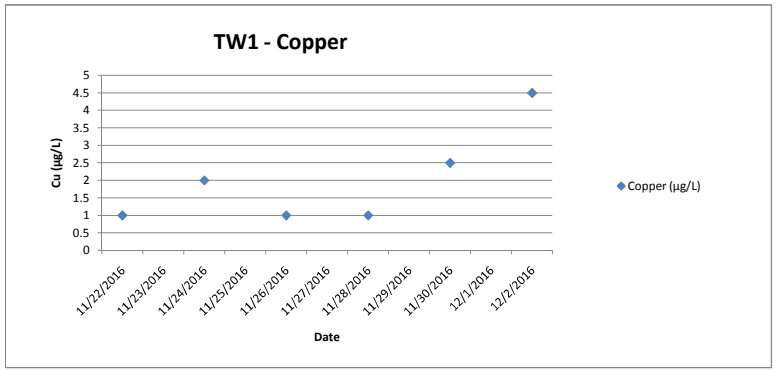

TW1 - Ortho-phosphate
OP (mg/mL-N)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

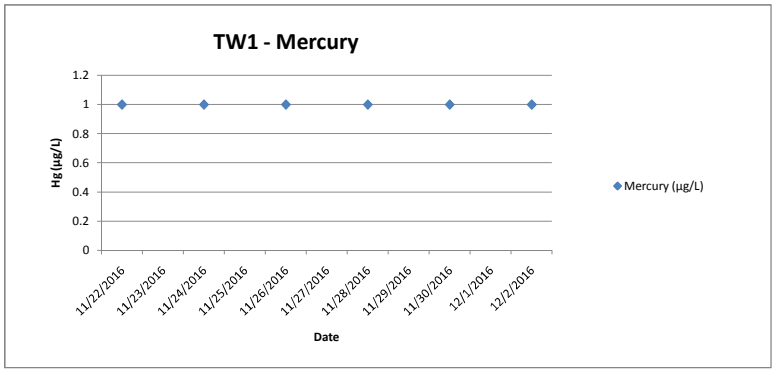

TW1 - Total Kjeldahl Nitrogen
TKN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

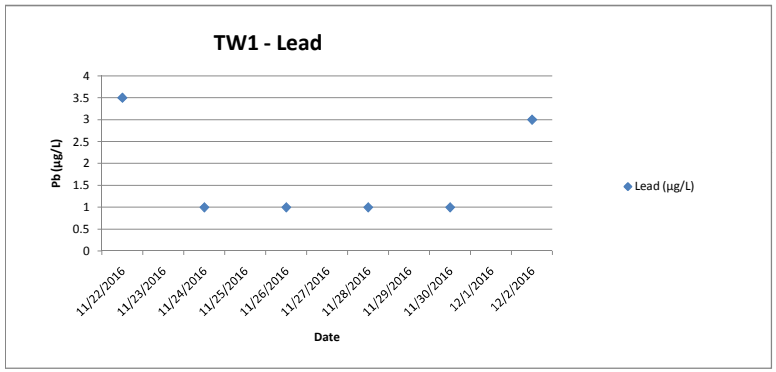

TW1 - Total Phosphorus
TP (mg/mL-N)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

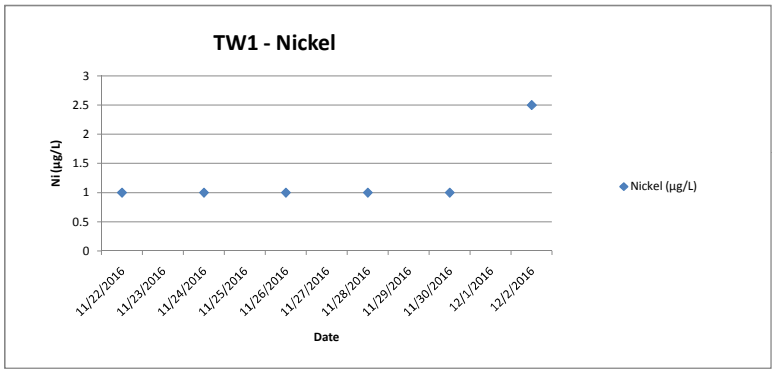

TW1- Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

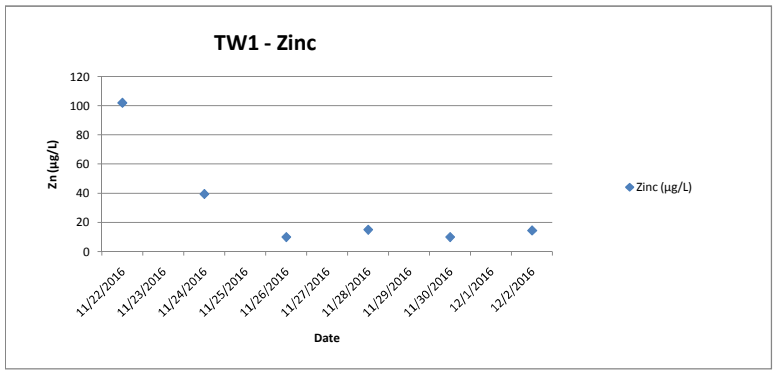

TW1 - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

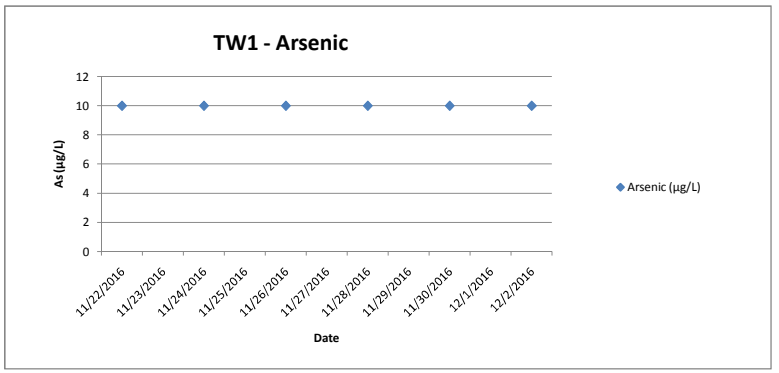

TW1 - Copper
Cu (µg/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

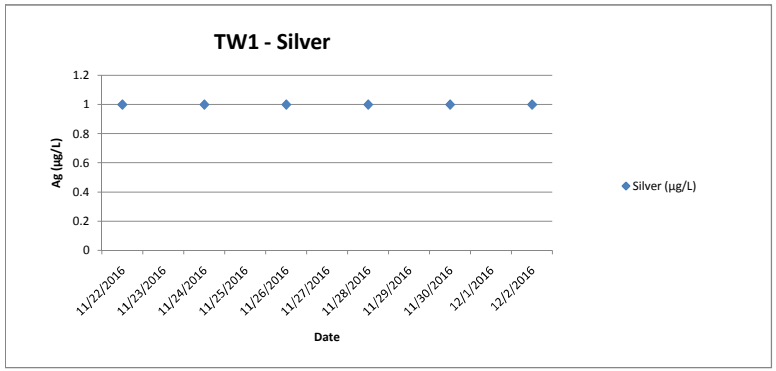

TW1 - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)

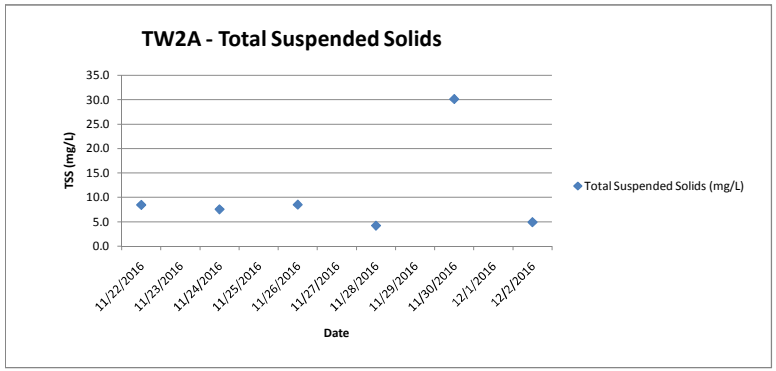

TW1 - Lead
Pb (µg/L)
4
3.5
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)

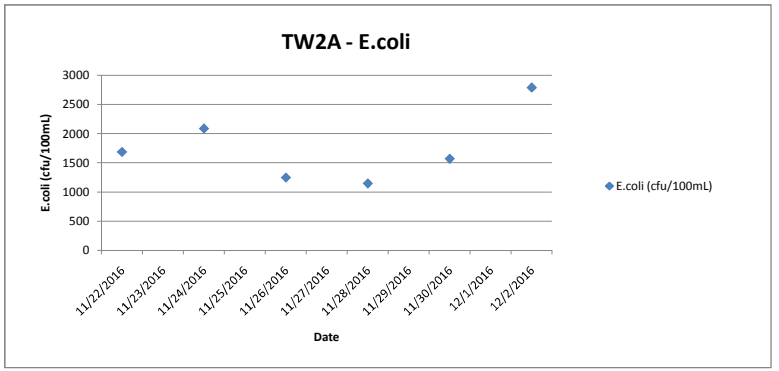

TW1 - Nickel
Ni (µg/L)
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)

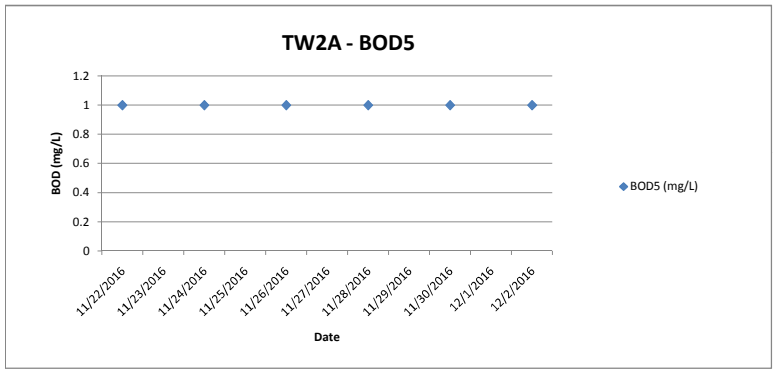

TW1 - Zinc
Zn (µg/L)
120
100
80
60
40
20
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)

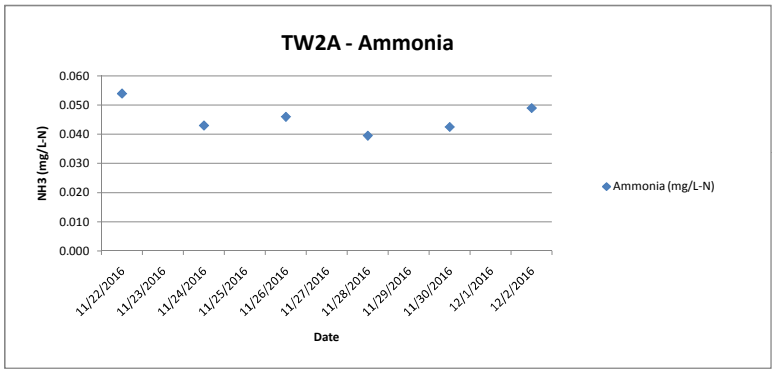

TW1 - Arsenic
As (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)

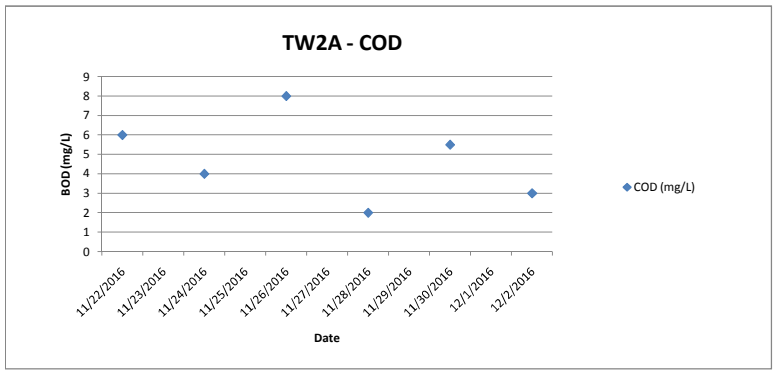

TW1 - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

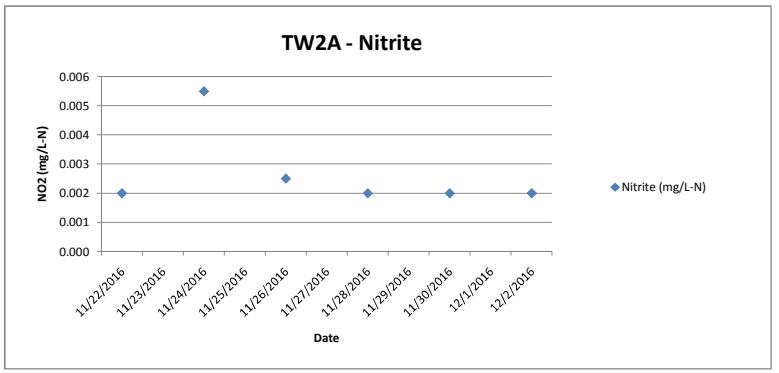

TW2A - Total Suspended Solids
TSS (mg/L)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Suspended Solids (mg/L)

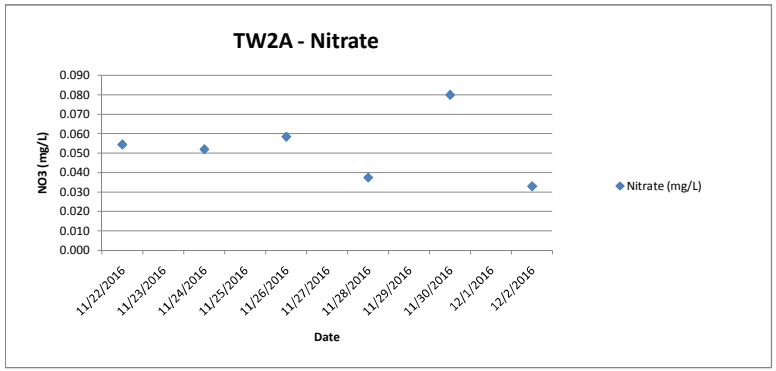

TW2A - E.coli
E.coli (cfu/100mL)
3000
2500
2000
1500
1000
500
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
E.coli (cfu/100mL)

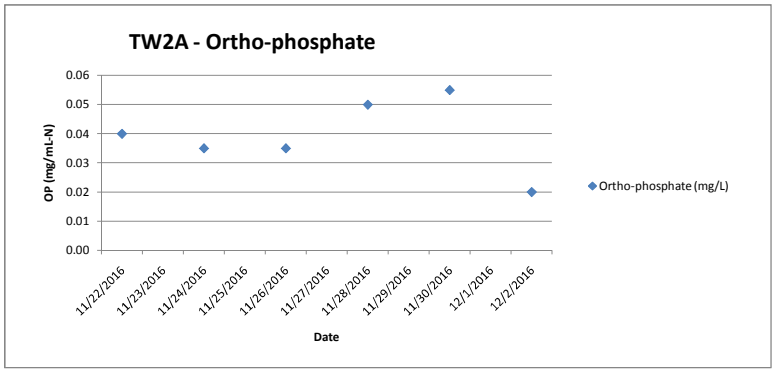

TW2A - BOD5
BOD (mg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
BOD5 (mg/L)

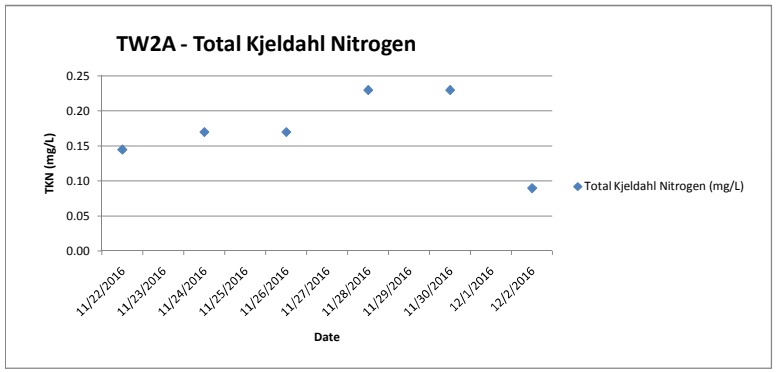

TW2A - Ammonia
NH3 (mg/L-N)
0.060
0.050
0.040
0.030
0.020
0.010
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ammonia (mg/L-N)

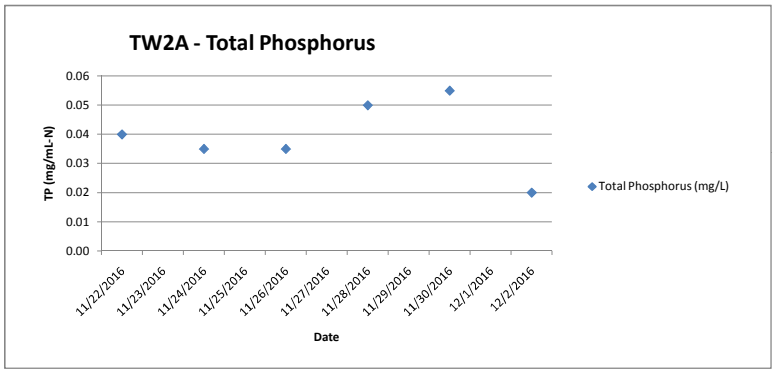

TW2A - COD
BOD (mg/L)
9
8
7
6
5
4
3
2
1
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
COD (mg/L)

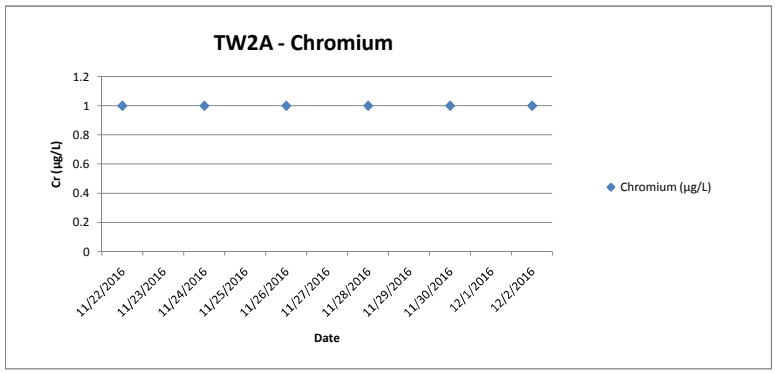

TW2A - Nitrite
NO2 (mg/L-N)
0.006
0.005
0.004
0.003
0.002
0.001
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrite (mg/L-N)

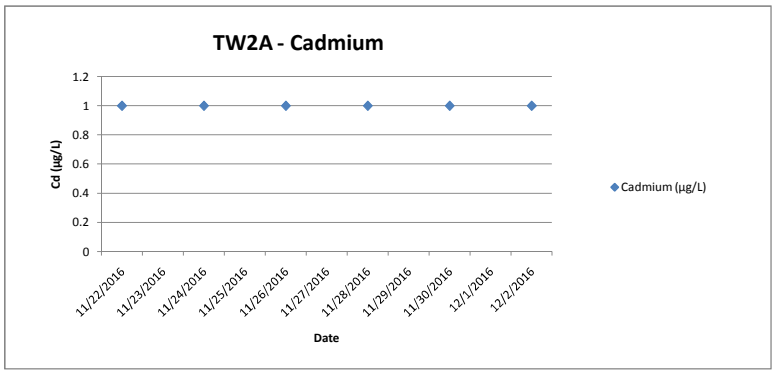

TW2A - Nitrate
NO3 (mg/L)
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nitrate (mg/L)

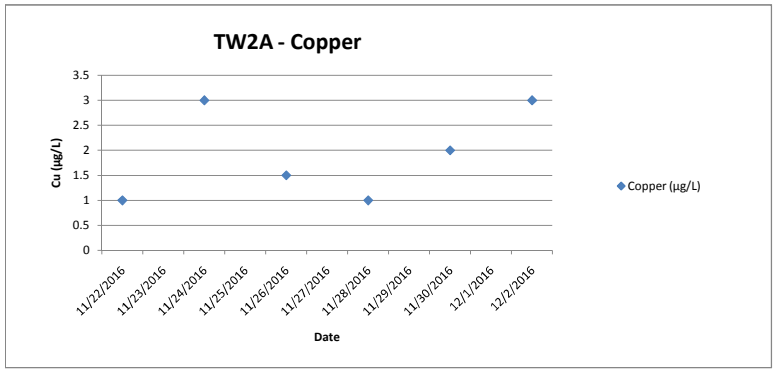

TW2A - Ortho-phosphate
OP (mg/mL-N)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Ortho-phosphate (mg/L)

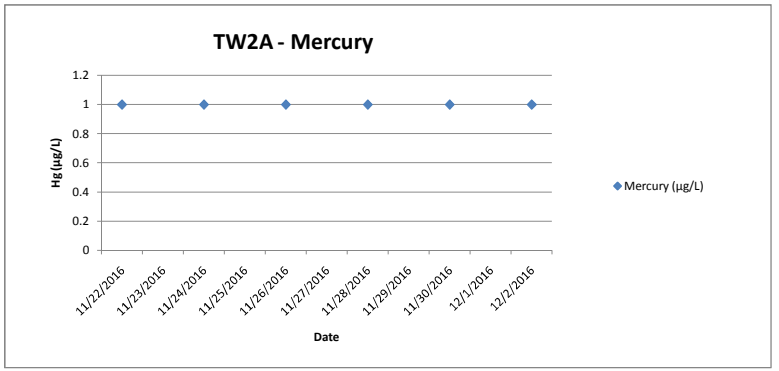

TW2A - Total Kjeldahl Nitrogen
TKN (mg/L)
0.25
0.20
0.15
0.10
0.05
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Kjeldahl Nitrogen (mg/L)

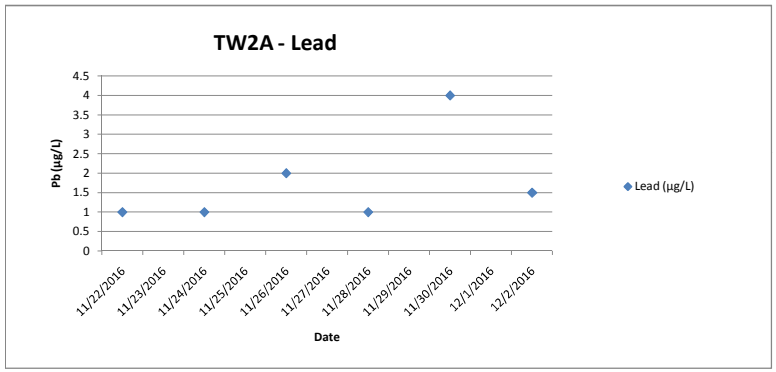

TW2A - Total Phosphorus
TP (mg/mL-N)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Total Phosphorus (mg/L)

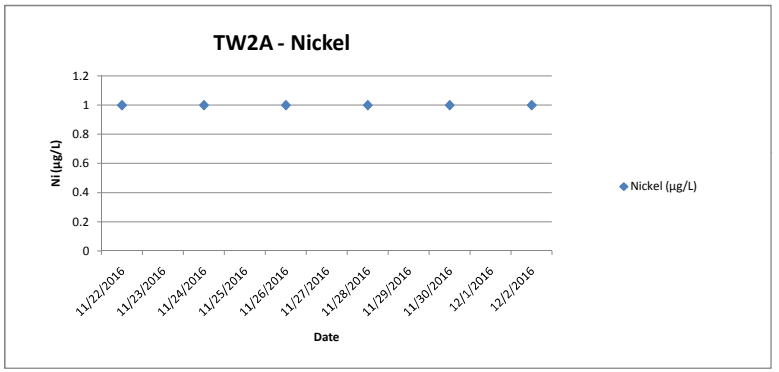

TW2A - Chromium
Cr (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Chromium (µg/L)

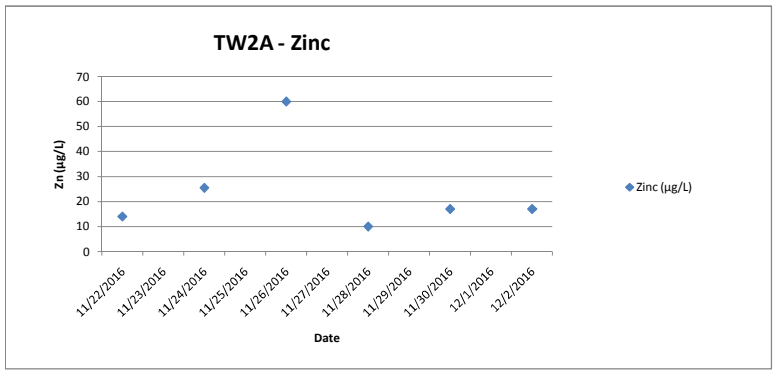

TW2A - Cadmium
Cd (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Cadmium (µg/L)

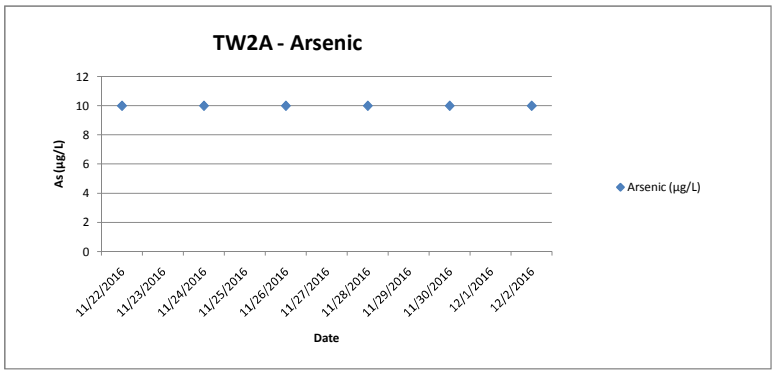

TW2A - Copper
Cu (µg/L)
3.5
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Copper (µg/L)

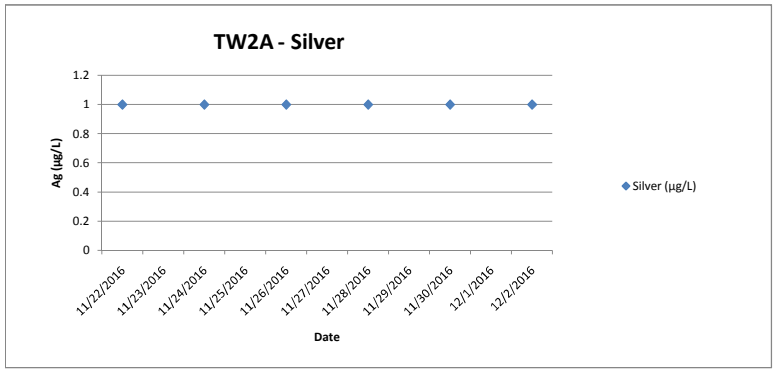

TW2A - Mercury
Hg (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Mercury (µg/L)


TW2A - Lead
Pb (µg/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Lead (µg/L)


TW2A - Nickel
Ni (µg/L)
1.2
1
0.8
0.6
0.4
0.2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Nickel (µg/L)


TW2A - Zinc
Zn (µg/L)
70
60
50
40
30
20
10
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Zinc (µg/L)


TW2A - Arsenic
As (µg/L)
12
10
8
6
4
2
0
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Arsenic (µg/L)


TW2A - Silver
1.2
1
0.8
0.6
0.4
0.2
0
Ag (µg/L)
11/22/2016
11/23/2016
11/24/2016
11/25/2016
11/26/2016
11/27/2016
11/28/2016
11/29/2016
11/30/2016
12/1/2016
12/2/2016
Date
Silver (µg/L)

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MaterialLab

Appendix G

Weather Condition During the Baseline Monitoring Period

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Date	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)		
11 October	26.8	24.5	22	79	0.1
12	25.8	24.6	23	84	0.9
13	29.3	26	24.2	77	Trace
14	29.9	26.7	25	76	Trace
15	30.3	27.2	24.6	72	0
16	30.8	28	25.9	71	0
17	28.8	26.6	24.1	81	16.7
18	25.5	24.8	23.9	96	178.7
19	25.9	25.1	24.4	96	223.4
20	29.5	27.3	24.7	82	0
21	28	26.1	24.4	86	72.5
22	29.4	27.5	26.1	84	1.9
23	29.1	27.1	25.8	88	0
24	29.1	27.3	26.1	88	Trace
25	29.8	27.3	26.1	87	Trace
26	30	27.1	25.7	84	0
27	30.9	27.5	25.4	79	0
28	31.5	28.2	26.3	75	0
29	29	26.7	24.3	79	0.5
30	26.6	24.4	22.9	74	0
31	28.7	25.5	23.1	70	0

Source: Hong Kong Observatory.

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MaterialLab

Date	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)		
22 November	24.5	22.7	21.6	95	36.5
23	21.6	20.5	16.7	93	25.9
24	19.8	17.3	15	76	Trace
25	22.3	20	17.4	78	0.1
26	21.1	17.6	13.3	89	50.3
27	19.9	16.2	12.8	83	8.6
28	20.1	18.1	16.1	68	0
29	20.5	19.2	17.5	66	0
30	22	19.7	17.4	64	0
1 December	22.4	19.8	17.2	67	0
2	22.4	20.5	18.4	74	0

Source: Hong Kong Observatory.

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Appendix H

Photo of Hotspot

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