

Technical Memorandum

Date: February 8, 2018

To: Diana Washington, P.E., Washington Department of Ecology

From: Adrianna Jarosz, P.E., Geosyntec Consultants
Brian Petty, P.E., Geosyntec Consultants

Subject: **Preliminary Reasonable Potential Analysis
NPDES Wastewater Discharge Permit Renewal Application
Permit No. WA0045586
Lehigh Cement Company Closed Cement Kiln Dust Pile Site
Metaline Falls, Washington**

INTRODUCTION

On behalf of the Lehigh Cement Company (Lehigh), Geosyntec Consultants (Geosyntec) has conducted a preliminary reasonable potential analysis for your use. The analysis is being submitted to you as part of the National Pollutant Discharge Elimination System (NPDES) permit renewal application for the Lehigh Closed Cement Kiln Dust (CKD) Pile Site (permit number WA0045586) located in Metaline Falls, Washington (the Site; **Figure 1**). The purpose of the analysis is to evaluate whether the effluent has a reasonable potential to violate surface water quality standards.

As outlined in NPDES Permit No. WA0045586, the current effluent discharge limits for the groundwater treatment system at the Site are:

Total arsenic	5 µg/L
Total chromium	10 µg/L
Total lead	5 µg/L
Total manganese	2,240 µg/L
pH	6.5 – 8.5 S.U.

As requested by you in an email dated September 6, 2017, Geosyntec conducted a Priority Pollutant scan on the groundwater treatment system influent and effluent. On September 28,

2017 two samples were collected from the treatment zone wells using low-flow sampling methodologies: one influent sample from well TZ-302, and one effluent composite sample from the outlets (TZOutlet-1, TZOutlet-2, and TZOutlet-3). As additionally requested, one grab sample was also collected from Sullivan Creek on September 28, 2017. The creek sample was collected upgradient of the site and analyzed for a limited list of analytes (alkalinity, hardness, pH and metals). The three samples were preserved as directed by the sampling laboratory and submitted to Anatek Laboratories, Inc. in Spokane, Washington.

PRIORITY POLLUTANT SAMPLING RESULTS

The results for the influent (TZ302092817), effluent (TZCOMP092817) and creek samples (MFCREEK092817) are provided in **Table 1** and the laboratory report is included in **Attachment A**. In addition, the data was reported in the US Environmental Protection Agency (EPA) Form 2C included in the NPDES permit renewal application package.

Additional effluent sampling data was available for total arsenic, chromium, lead, and manganese from three sampling events conducted in January, February and March 2017 (**Table 2**). This data was also included in the reasonable potential analysis and is reported in Form 2C. Laboratory results for analytes with positive detections in the effluent composite sample (TZCOMP092817) above method detection limits (MDL) are listed in **Table 3**. For analytes with multiple data points (arsenic, chromium, lead, and manganese), the maximum concentration was presented.

As shown in **Table 3**, the maximum observed sampling results were corrected to project an estimated maximum effluent concentration. This was done in accordance with the statistical methods outlined in the *Technical Support Document for Water Quality-Based Toxics Control* published by the EPA in March 1991 (referred to as “EPA TDS”). As recommended in Box 3-2 of the EPA TDS, a coefficient of variation of 0.6 was selected for each analyte, given that the number of sampling results for each analyte was less than 10. As prescribed in the *Water Quality Program Permit Writer’s Manual* published by Ecology in January 2015, a confidence interval of 95% was used for the statistical analysis. The multiplying factors were then acquired from Table 3-2 of the EPA TDS, to project the maximum concentrations shown in **Table 3**.

REASONABLE POTENTIAL ANALYSIS AT PIPE OUTFALL

A reasonable potential analysis was conducted on the effluent at the pipe outfall. As shown in **Table 4**, effluent concentrations were either compared against the existing NPDES permit limits (for arsenic, chromium, lead and manganese), or against Ecology’s current Cleanup Levels and Risk Calculation (CLARC) surface water screening levels (for the remaining analytes). The

CLARC screening levels included both human health-based and aquatic life-based values and are listed in **Attachment B**.

As shown in **Table 4**, the following pollutants demonstrated a potential to violate water quality standards at the pipe outfall:

- Aluminum (only for projected maximum concentration);
- Arsenic;
- Bis(2-ethylhexyl)phthalate (only for projected maximum concentration);
- Copper;
- Iron;
- Lead (only for projected maximum concentration);
- Mercury; and
- Zinc (only for projected maximum concentration).

REASONABLE POTENTIAL ANALYSIS IN SULLIVAN CREEK

For the analytes that demonstrated a reasonable potential at the outfall (discussed above), a reasonable potential analysis was also completed for effluent mixing within Sullivan Creek using an Ecology spreadsheet.

Arsenic has been left out of the spreadsheet analysis, as an arsenic-specific computer modeling mixing zone study has been completed and is summarized in a separate report (*Mixing Zone Study Results Report for the Closed Cement Kiln Dust Pile Site Groundwater Treatment System, Metaline Falls, Washington* prepared by Geosyntec in February 2018).

Inputs used in the Ecology spreadsheet are presented in **Table 5**, and the spreadsheet results are included in **Attachment C**. Water quality criteria listed in the table in the “WQ Criteria” tab were verified against currently published criteria to capture the most up-to-date standards, as referenced in the notes section below the table.

As shown on the second page of **Attachment C**, the preliminary analysis determined that the pollutants do not have a reasonable potential for violation of the aquatic life or human health water quality standards in Sullivan Creek based on discharge and receiving water conditions.

SUMMARY

Based on Geosyntec’s preliminary assessment the analytes detected in the priority pollutant scan on the treatment system effluent, aside from arsenic, do not pose a reasonable potential to violate

water quality standards within Sullivan Creek. The reasonable potential for arsenic in effluent is evaluated independently under a separate mixing zone study. Electronic files from this tech memo can be made available to you upon request.

* * * * *

Attachments:

Figure 1: Site Map

Table 1: Priority Pollutant Sampling Results

Table 2: Additional Effluent Water Quality Data

Table 3: Projected Maximum Effluent Concentrations

Table 4: Reasonable Potential Analysis at Pipe Outfalls

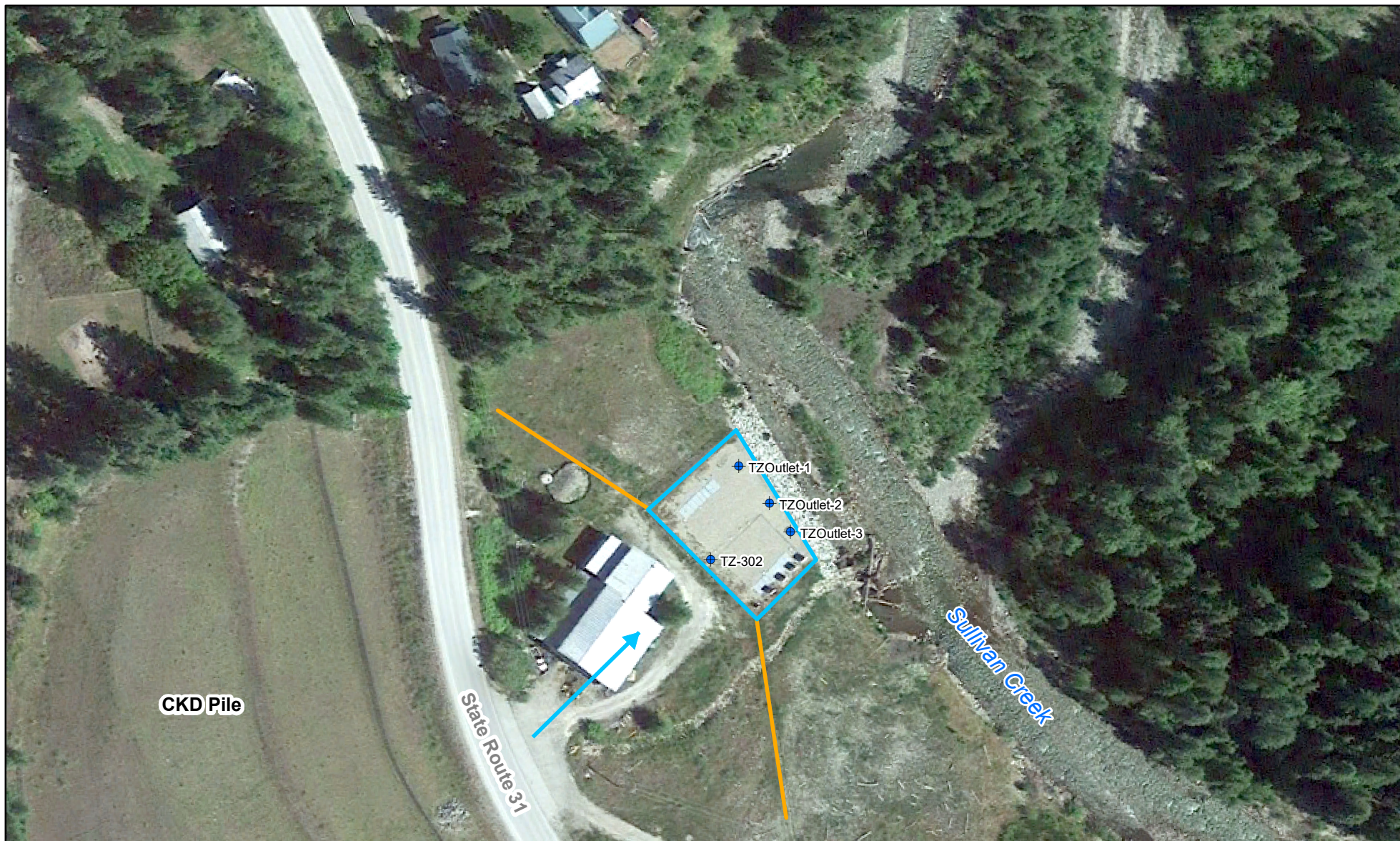
Table 5: Inputs for Ecology Reasonable Potential Spreadsheet

Attachment A: Priority Pollutant Sampling Lab Report

Attachment B: CLARC Surface Water Quality Screening Levels

Attachment C: Reasonable Potential in Sullivan Creek Spreadsheet

FIGURE



Legend

- ◆ Discharge Outlet
- Groundwater Flow
- Buried Funnel and Gate Barrier Walls
- Treatment Zone

Notes:



0 100
Feet

Site Map Reasonable Potential Analysis

Lehigh Cement Company
Closed CKD Pile Site
Metaline Falls, WA

Geosyntec
consultants

HR0996C

January 2018

Figure

1

TABLES

TABLE 1: PRIORITY POLLUTANT SCAN RESULTS

Sample	Sampling Date	Sampling Time	Analyte	Result	Units	LabFlag	Reporting Limit	Detection Limit
Creek	9/28/2017	15:23	Alkalinity	88	mg/L as CaCO3		5	2.78
			Antimony	ND	mg/L		0.005	0.0003
			Arsenic	ND	mg/L		0.005	0.0001
			Beryllium	ND	mg/L		0.005	0.00032
			Cadmium	ND	mg/L		0.005	0.0003
			Chromium	ND	mg/L		0.005	0.00029
			Copper	ND	mg/L		0.005	0.00029
			Hardness	89	mg/L as CaCO3		1	0.687
			Lead	ND	mg/L		0.005	0.0001
			Mercury-CVAFS	0.00304	µg/L	J	0.01	0.0002
			Nickel	ND	mg/L		0.005	0.0003
			pH	7.95	SU			1
			Selenium	ND	mg/L		0.005	0.00029
			Thallium	ND	mg/L		0.005	0.00032
			Zinc	0.0126	mg/L		0.005	0.00028
TZ-302 (Influent)	9/28/2017	14:45	1,1,1,2-Tetrachloroethane	ND	µg/L		0.5	0.1
			1,1,1-Trichloroethane	ND	µg/L		0.5	0.1
			1,1,2,2-Tetrachloroethane	ND	µg/L		0.5	0.1
			1,1,2-Trichloroethane	ND	µg/L		0.5	0.1
			1,1-Dichloroethane	ND	µg/L		0.5	0.1
			1,1-Dichloroethene	ND	µg/L		0.5	0.1
			1,1-dichloropropene	ND	µg/L		0.5	0.1
			1,2,3-Trichlorobenzene	ND	µg/L		0.5	0.1
			1,2,3-Trichloropropane	ND	µg/L		0.5	0.1
			1,2,4-Trichlorobenzene	ND	µg/L		0.5	0.1
			1,2,4-Trichlorobenzene	ND	µg/L		0.5	0.1
			1,2,4-Trimethylbenzene	ND	µg/L		0.5	0.1
			1,2-Dibromo-3-chloropropane(DBCP)	ND	µg/L		0.5	0.1
			1,2-Dibromoethane (EDB)	ND	µg/L		0.5	0.1
			1,2-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,2-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,2-Dichloroethane	ND	µg/L		0.5	0.1
			1,2-Dichloropropane	ND	µg/L		0.5	0.1

TZ-302 (Influent)	9/28/2017	14:45	1,2-Diphenyl hydrazine	ND	µg/L		0.5	0.1
			1,3,5-Trimethylbenzene	ND	µg/L		0.5	0.1
			1,3-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,3-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,3-Dichloropropane	ND	µg/L		0.5	0.1
			1,4-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,4-Dichlorobenzene	ND	µg/L		0.5	0.1
			1-Methylnaphthalene	ND	µg/L		0.5	0.1
			1-Methylnaphthalene	ND	µg/L		0.5	0.1
			2,2-Dichloropropane	ND	µg/L		0.5	0.1
			2,3,4,6-Tetrachlorophenol	ND	µg/L		0.5	0.1
			2,3,5,6-Tetrachlorophenol	ND	µg/L		0.5	0.1
			2,3,7,8-TCDD	ND	pg/L		5	5
			2,4,5-Trichlorophenol	ND	µg/L		0.5	0.1
			2,4,6-Trichlorophenol	ND	µg/L		0.5	0.1
			2,4-Dichlorophenol	ND	µg/L		0.5	0.1
			2,4-Dimethylphenol	ND	µg/L		0.5	0.1
			2,4-Dinitrophenol	ND	µg/L		0.5	0.2
			2,4-Dinitrotoluene	ND	µg/L		0.5	0.1
			2,6-Dinitrotoluene	ND	µg/L		0.5	0.1
			2-Chloroethyl vinyl ether	ND	µg/L		20	0.5
			2-Chloronaphthalene	ND	µg/L		0.5	0.1
			2-Chlorophenol	ND	µg/L		0.5	0.1
			2-Chlorotoluene	ND	µg/L		0.5	0.1
			2-hexanone	ND	µg/L		2.5	0.5
			2-Methylnaphthalene	ND	µg/L		0.5	0.1
			2-Methylnaphthalene	ND	µg/L		0.5	0.1
			2-Methylphenol	ND	µg/L		0.5	0.1
			2-Nitroaniline	ND	µg/L		0.5	0.1
			2-Nitrophenol	ND	µg/L		0.5	0.2
			3,3'-Dichlorobenzidine	ND	µg/L		0.5	0.1
			3+4-Methylphenol	ND	µg/L		0.5	0.1
			3-Nitroaniline	ND	µg/L		0.5	0.1
			4,4-DDD	ND	µg/L		0.01	0.001
			4,4-DDE	ND	µg/L		0.01	0.004
			4,4-DDT	ND	µg/L		0.01	0.004

TZ-302 (Influent)	9/28/2017	14:45	4,6-Dinitro-2-methylphenol	ND	µg/L		0.5	0.2
			4-Bromophenyl-phenylether	ND	µg/L		0.5	0.1
			4-Chloro-3-methylphenol	ND	µg/L		0.5	0.1
			4-Chloroaniline	ND	µg/L		0.5	0.1
			4-Chlorophenyl-phenylether	ND	µg/L		0.5	0.1
			4-Chlorotoluene	ND	µg/L		0.5	0.1
			4-Nitroaniline	ND	µg/L		0.5	0.1
			4-Nitrophenol	ND	µg/L		0.5	0.2
			Acenaphthene	ND	µg/L		0.5	0.1
			Acenaphthylene	ND	µg/L		0.5	0.1
			Acetone	ND	µg/L		2.5	0.5
			Acetonitrile	ND	µg/L		2.5	0.5
			Acrolein	ND	µg/L		2.5	0.5
			Acrylonitrile	ND	µg/L		2.5	0.5
			Aldrin	ND	µg/L		0.01	0.005
			Alkalinity	385	mg/L as CaCO3		5	2.78
			alpha-BHC	ND	µg/L		0.01	0.002
			Aluminum	0.0596	mg/L		0.01	0.002
			Ammonia-nitrogen	0.480	mg/L		0.02	0.009
			Aniline	ND	µg/L		0.5	0.1
			Anthracene	ND	µg/L		0.5	0.1
			Antimony	ND	mg/L		0.001	0.0003
			Aroclor 1016 (PCB-1016)	ND	µg/L		0.2	0.1
			Aroclor 1221 (PCB-1221)	ND	µg/L		0.2	0.1
			Aroclor 1232 (PCB-1232)	ND	µg/L		0.2	0.1
			Aroclor 1242 (PCB-1242)	ND	µg/L		0.2	0.1
			Aroclor 1248 (PCB-1248)	ND	µg/L		0.2	0.1
			Aroclor 1254 (PCB-1254)	ND	µg/L		0.2	0.1
			Aroclor 1260 (PCB-1260)	ND	µg/L		0.2	0.1
			Arsenic	0.00612	mg/L		0.001	0.0001
			Barium	0.0470	mg/L		0.001	0.0001
			Benzene	ND	µg/L		0.5	0.1
			Benzene	ND	µg/L		1	0.1
			Benzidine	ND	µg/L		0.5	0.1
			Benzo(ghi)perylene	ND	µg/L		0.5	0.1
			Benzo[a]anthracene	ND	µg/L		0.5	0.1

TZ-302 (Influent)	9/28/2017	14:45	Benzo[a]pyrene	ND	µg/L		0.5	0.1
			Benzo[b]fluoranthene	ND	µg/L		0.5	0.1
			Benzo[k]fluoranthene	ND	µg/L		0.5	0.1
			Benzyl alcohol	ND	µg/L		0.5	0.1
			Beryllium	ND	mg/L		0.001	0.00032
			beta-BHC	ND	µg/L		0.01	0.002
			bis(2-Chloroethoxy)methane	ND	µg/L		0.5	0.1
			bis(2-Chloroethyl)ether	ND	µg/L		0.5	0.1
			bis(2-chloroisopropyl)ether	ND	µg/L		0.5	0.1
			bis(2-Ethylhexyl)phthalate	ND	µg/L		0.5	0.2
			Biochemical Oxygen Demand (BOD)	ND	mg/L		2	2
			Boron	0.0276	mg/L		0.01	0.001
			Bromobenzene	ND	µg/L		0.5	0.1
			Bromochloromethane	ND	µg/L		0.5	0.1
			Bromodichloromethane	ND	µg/L		0.5	0.1
			Bromoform	ND	µg/L		0.5	0.1
			Bromomethane	ND	µg/L		0.5	0.1
			Butylbenzylphthalate	ND	µg/L		0.5	0.2
			Cadmium	ND	mg/L		0.001	0.0003
			Carbazole	ND	µg/L		0.5	0.1
			Carbon disulfide	ND	µg/L		2.5	0.5
			Carbon Tetrachloride	ND	µg/L		0.5	0.1
			Chlordane	ND	µg/L		0.1	0.05
			Chlorobenzene	ND	µg/L		0.5	0.1
			Chloroethane	ND	µg/L		0.5	0.1
			Chloroform	ND	µg/L		0.5	0.1
			Chloromethane	ND	µg/L		0.5	0.1
			Chromium	ND	mg/L		0.005	0.00029
			Chrysene	ND	µg/L		0.5	0.1
			cis-1,2-dichloroethene	ND	µg/L		0.5	0.1
			cis-1,3-Dichloropropene	ND	µg/L		0.5	0.1
			Cobalt	ND	mg/L		0.001	0.00018
			Chemical Oxygen Demand (COD)	31.0	mg/L		5	1.84
			Copper	0.0165	mg/L		0.001	0.00029
			Cyanide	ND	mg/L		0.01	0.0058
			delta-BHC	ND	µg/L		0.01	0.002

TZ-302 (Influent)	9/28/2017	14:45	Dibenz[a,h]anthracene	ND	µg/L		0.5	0.1
			Dibenzofuran	ND	µg/L		0.5	0.1
			Dibromochloromethane	ND	µg/L		0.5	0.1
			Dibromomethane	ND	µg/L		0.5	0.1
			Dichlorodifluoromethane	ND	µg/L		0.5	0.1
			Dieldrin	ND	µg/L		0.01	0.003
			Diethyl ether	ND	µg/L		0.5	0.1
			Diethylphthalate	ND	µg/L		0.5	0.2
			Dimethylphthalate	ND	µg/L		0.5	0.2
			Di-n-butylphthalate	ND	µg/L		0.5	0.2
			Di-n-octylphthalate	ND	µg/L		0.5	0.2
			Dissolved Oxygen (DO)	1.93	mg/L		0.001	0.001
			Endosulfan I	ND	µg/L		0.01	0.002
			Endosulfan II	ND	µg/L		0.01	0.003
			Endosulfan sulfate	ND	µg/L		0.01	0.004
			Endrin	ND	µg/L		0.01	0.002
			Endrin aldehyde	ND	µg/L		0.01	0.001
			Endrin ketone	ND	µg/L		0.01	0.004
			Ethylbenzene	ND	µg/L		0.5	0.1
			Ethylbenzene	ND	µg/L		1	0.09
			Fluoranthene	ND	µg/L		0.5	0.1
			Fluorene	ND	µg/L		0.5	0.1
			Fluoride	0.476	mg/L		0.1	0.042
			gamma-BHC (Lindane)	ND	µg/L		0.01	0.001
			Hardness	76	mg/L as CaCO3		1	0.687
			Heptachlor	ND	µg/L		0.01	0.003
			Heptachlor epoxide	ND	µg/L		0.01	0.008
			Hexachlorobenzene	ND	µg/L		0.5	0.1
			Hexachlorobutadiene	ND	µg/L		0.5	0.1
			Hexachlorobutadiene	ND	µg/L		0.5	0.1
			Hexachlorocyclopentadiene	ND	µg/L		0.5	0.1
			Hexachloroethane	ND	µg/L		0.5	0.1
			Hexane extractable material (HEM)	ND	mg/L		1	0.5
			Indeno[1,2,3-cd]pyrene	ND	µg/L		0.5	0.1
			Iodomethane	ND	µg/L		0.5	0.1
			Iron	0.784	mg/L		0.1	0.005

TZ-302 (Influent)	9/28/2017	14:45	Isophorone	ND	µg/L		0.5	0.1
			Isopropylbenzene	ND	µg/L		0.5	0.1
			Lead	0.00227	mg/L		0.001	0.0001
			m+p-Xylene	ND	µg/L		0.5	0.1
			m+p-Xylene	ND	µg/L		2	0.22
			Magnesium	5.43	mg/L		0.5	0.0101
			Manganese	0.231	mg/L		0.001	0.00028
			Mercury-Trace	0.0389	µg/L		0.0005	0.0002
			Methoxychlor	ND	µg/L		0.01	0.005
			Methyl ethyl ketone (MEK)	ND	µg/L		2.5	0.5
			Methyl isobutyl ketone (MIBK)	ND	µg/L		2.5	0.5
			Methylene chloride	ND	µg/L		0.5	0.1
			methyl-t-butyl ether (MTBE)	ND	µg/L		2.5	0.5
			methyl-t-butyl ether (MTBE)	ND	µg/L		1	0.11
			Molybdenum	0.164	mg/L		0.001	0.00027
			Naphthalene	ND	µg/L		0.5	0.1
			Naphthalene	ND	µg/L		0.5	0.1
			n-Butylbenzene	ND	µg/L		0.5	0.1
			Nickel	0.00724	mg/L		0.001	0.0003
			Nitrobenzene	ND	µg/L		0.5	0.1
			Nitrobenzene	ND	µg/L		0.5	0.1
			Nitrosodimethylamine	ND	µg/L		0.5	0.1
			n-Nitroso-di-n-propylamine	ND	µg/L		0.5	0.1
			n-Nitrosodiphenylamine	ND	µg/L		0.5	0.1
			n-Propylbenzene	ND	µg/L		0.5	0.1
			o-Xylene	ND	µg/L		0.5	0.1
			o-Xylene	ND	µg/L		1	0.16
			Pentachlorophenol	ND	µg/L		0.5	0.1
			pH	7.72	SU			1
			Phenanthrene	ND	µg/L		0.5	0.1
			Phenol	ND	µg/L		0.5	0.1
			p-isopropyltoluene	ND	µg/L		0.5	0.1
			Pyrene	ND	µg/L		0.5	0.1
			Pyridine	ND	µg/L		0.5	0.2
			sec-Butylbenzene	ND	µg/L		0.5	0.1
			Selenium	ND	mg/L		0.005	0.00029

TZ-302 (Influent)	9/28/2017	14:45	Silver	ND	mg/L		0.001	0.00005
			Styrene	ND	µg/L		0.5	0.1
			Sulfate	284	mg/L		2	0.055
			Sulfite	ND	mg/L		2	2
			Total Dissolved Solids (TDS)	1100	mg/L		5	3.94
			tert-Butylbenzene	ND	µg/L		0.5	0.1
			Tetrachloroethene	ND	µg/L		0.5	0.1
			Thallium	ND	mg/L		0.001	0.00032
			Tin	ND	mg/L		0.01	0.002
			Titanium	0.00770	mg/L		0.001	0.0001
			Toluene	ND	µg/L		0.5	0.1
			Toluene	ND	µg/L		1	0.19
			Total BTEX	ND	µg/L		1	0.09
			Phosphorus, Total	0.291	mg/L		0.1	0.005
			Total Xylene	ND	µg/L		0.5	0.1
			Toxaphene	ND	µg/L		0.1	0.05
			trans-1,2-Dichloroethene	ND	µg/L		0.5	0.1
			trans-1,3-Dichloropropene	ND	µg/L		0.5	0.1
			trans-1-4-Dichloro-2-butene	ND	µg/L		0.5	0.1
			Trichloroethene	ND	µg/L		0.5	0.1
			Trichlorofluoromethane	ND	µg/L		0.5	0.1
			Total Suspended Solids (TSS)	ND	mg/L		1	1
			Vinyl acetate	ND	µg/L		2.5	0.1
			Vinyl Chloride	ND	µg/L		0.5	0.1
			Zinc	0.00665	mg/L		0.001	0.00028
TZOutlet- Comp (Effluent)	9/28/2017	13:57	1,1,1,2-Tetrachloroethane	ND	µg/L		0.5	0.1
			1,1,1-Trichloroethane	ND	µg/L		0.5	0.1
			1,1,2,2-Tetrachloroethane	ND	µg/L		0.5	0.1
			1,1,2-Trichloroethane	ND	µg/L		0.5	0.1
			1,1-Dichloroethane	ND	µg/L		0.5	0.1
			1,1-Dichloroethene	ND	µg/L		0.5	0.1
			1,1-dichloropropene	ND	µg/L		0.5	0.1
			1,2,3-Trichlorobenzene	ND	µg/L		0.5	0.1
			1,2,3-Trichloropropane	ND	µg/L		0.5	0.1
			1,2,4-Trichlorobenzene	ND	µg/L		0.5	0.1
			1,2,4-Trichlorobenzene	ND	µg/L		0.5	0.1

TZOutlet- Comp (Effluent)	9/28/2017	13:57	1,2,4-Trimethylbenzene	ND	µg/L		0.5	0.1
			1,2-Dibromo-3-chloropropane(DBCP)	ND	µg/L		0.5	0.1
			1,2-Dibromoethane (EDB)	ND	µg/L		0.5	0.1
			1,2-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,2-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,2-Dichloroethane	ND	µg/L		0.5	0.1
			1,2-Dichloropropane	ND	µg/L		0.5	0.1
			1,2-Diphenyl hydrazine	ND	µg/L		0.5	0.1
			1,3,5-Trimethylbenzene	ND	µg/L		0.5	0.1
			1,3-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,3-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,3-Dichloropropane	ND	µg/L		0.5	0.1
			1,4-Dichlorobenzene	ND	µg/L		0.5	0.1
			1,4-Dichlorobenzene	ND	µg/L		0.5	0.1
			1-Methylnaphthalene	ND	µg/L		0.5	0.1
			1-Methylnaphthalene	ND	µg/L		0.5	0.1
			2,2-Dichloropropane	ND	µg/L		0.5	0.1
			2,3,4,6-Tetrachlorophenol	ND	µg/L		0.5	0.1
			2,3,5,6-Tetrachlorophenol	ND	µg/L		0.5	0.1
			2,3,7,8-TCDD	ND	pg/L		10	5
			2,4,5-Trichlorophenol	ND	µg/L		0.5	0.1
			2,4,6-Trichlorophenol	ND	µg/L		0.5	0.1
			2,4-Dichlorophenol	ND	µg/L		0.5	0.1
			2,4-Dimethylphenol	ND	µg/L		0.5	0.1
			2,4-Dinitrophenol	ND	µg/L		0.5	0.2
			2,4-Dinitrotoluene	ND	µg/L		0.5	0.1
			2,6-Dinitrotoluene	ND	µg/L		0.5	0.1
			2-Chloroethyl vinyl ether	ND	µg/L		20	0.5
			2-Chloronaphthalene	ND	µg/L		0.5	0.1
			2-Chlorophenol	ND	µg/L		0.5	0.1
			2-Chlorotoluene	ND	µg/L		0.5	0.1
			2-hexanone	ND	µg/L		2.5	0.5
			2-Methylnaphthalene	ND	µg/L		0.5	0.1
			2-Methylnaphthalene	ND	µg/L		0.5	0.1
			2-Methylphenol	ND	µg/L		0.5	0.1
			2-Nitroaniline	ND	µg/L		0.5	0.1

TZOutlet- Comp (Effluent)	9/28/2017	13:57	2-Nitrophenol	ND	µg/L		0.5	0.2
			3,3'-Dichlorobenzidine	ND	µg/L		0.5	0.1
			3+4-Methylphenol	ND	µg/L		0.5	0.1
			3-Nitroaniline	ND	µg/L		0.5	0.1
			4,4-DDD	ND	µg/L		0.01	0.001
			4,4-DDE	ND	µg/L		0.01	0.004
			4,4-DDT	ND	µg/L		0.01	0.004
			4,6-Dinitro-2-methylphenol	ND	µg/L		0.5	0.2
			4-Bromophenyl-phenylether	ND	µg/L		0.5	0.1
			4-Chloro-3-methylphenol	ND	µg/L		0.5	0.1
			4-Chloroaniline	ND	µg/L		0.5	0.1
			4-Chlorophenyl-phenylether	ND	µg/L		0.5	0.1
			4-Chlorotoluene	ND	µg/L		0.5	0.1
			4-Nitroaniline	ND	µg/L		0.5	0.1
			4-Nitrophenol	ND	µg/L		0.5	0.2
			Acenaphthene	ND	µg/L		0.5	0.1
			Acenaphthylene	ND	µg/L		0.5	0.1
			Acetone	ND	µg/L		2.5	0.5
			Acetonitrile	ND	µg/L		2.5	0.5
			Acrolein	ND	µg/L		2.5	0.5
			Acrylonitrile	ND	µg/L		2.5	0.5
			Aldrin	ND	µg/L		0.01	0.005
			Alkalinity	401	mg/L as CaCO3		5	2.78
			alpha-BHC	ND	µg/L		0.01	0.002
			Aluminum	0.0430	mg/L		0.01	0.002
			Ammonia-nitrogen	0.125	mg/L		0.02	0.009
			Aniline	ND	µg/L		0.5	0.1
			Anthracene	ND	µg/L		0.5	0.1
			Antimony	ND	mg/L		0.001	0.0003
			Aroclor 1016 (PCB-1016)	ND	µg/L		0.2	0.1
			Aroclor 1221 (PCB-1221)	ND	µg/L		0.2	0.1
			Aroclor 1232 (PCB-1232)	ND	µg/L		0.2	0.1
			Aroclor 1242 (PCB-1242)	ND	µg/L		0.2	0.1
			Aroclor 1248 (PCB-1248)	ND	µg/L		0.2	0.1
			Aroclor 1254 (PCB-1254)	ND	µg/L		0.2	0.1
			Aroclor 1260 (PCB-1260)	ND	µg/L		0.2	0.1

TZOutlet- Comp (Effluent)	9/28/2017	13:57	Arsenic	0.0105	mg/L		0.001	0.0001
			Barium	0.0878	mg/L		0.001	0.0001
			Benzene	ND	µg/L		0.5	0.1
			Benzene	ND	µg/L		1	0.1
			Benzidine	ND	µg/L		0.5	0.1
			Benzo(ghi)perylene	ND	µg/L		0.5	0.1
			Benzo[a]anthracene	ND	µg/L		0.5	0.1
			Benzo[a]pyrene	ND	µg/L		0.5	0.1
			Benzo[b]fluoranthene	ND	µg/L		0.5	0.1
			Benzo[k]fluoranthene	ND	µg/L		0.5	0.1
			Benzyl alcohol	ND	µg/L		0.5	0.1
			Beryllium	ND	mg/L		0.001	0.00032
			beta-BHC	ND	µg/L		0.01	0.002
			bis(2-Chloroethoxy)methane	ND	µg/L		0.5	0.1
			bis(2-Chloroethyl)ether	ND	µg/L		0.5	0.1
			bis(2-chloroisopropyl)ether	ND	µg/L		0.5	0.1
			bis(2-Ethylhexyl)phthalate	0.86	µg/L		0.5	0.2
			Biochemical Oxygen Demand (BOD)	ND	mg/L		2	2
			Boron	0.0271	mg/L		0.01	0.001
			Bromobenzene	ND	µg/L		0.5	0.1
			Bromochloromethane	ND	µg/L		0.5	0.1
			Bromodichloromethane	ND	µg/L		0.5	0.1
			Bromoform	ND	µg/L		0.5	0.1
			Bromomethane	ND	µg/L		0.5	0.1
			Butylbenzylphthalate	ND	µg/L		0.5	0.2
			Cadmium	ND	mg/L		0.001	0.0003
			Carbazole	ND	µg/L		0.5	0.1
			Carbon disulfide	ND	µg/L		2.5	0.5
			Carbon Tetrachloride	ND	µg/L		0.5	0.1
			Chlordane	ND	µg/L		0.1	0.05
			Chlorobenzene	ND	µg/L		0.5	0.1
			Chloroethane	ND	µg/L		0.5	0.1
			Chloroform	ND	µg/L		0.5	0.1
			Chloromethane	ND	µg/L		0.5	0.1
			Chromium	ND	mg/L		0.005	0.00029
			Chrysene	ND	µg/L		0.5	0.1

TZOutlet-Comp (Effluent)	9/28/2017	13:57	cis-1,2-dichloroethene	ND	µg/L		0.5	0.1
			cis-1,3-Dichloropropene	ND	µg/L		0.5	0.1
			Cobalt	0.00315	mg/L		0.001	0.00018
			Chemical Oxygen Demand (COD)	21.1	mg/L		5	1.84
			Copper	0.00736	mg/L		0.001	0.00029
			Cyanide	ND	mg/L		0.01	0.0058
			delta-BHC	ND	µg/L		0.01	0.002
			Dibenz[a,h]anthracene	ND	µg/L		0.5	0.1
			Dibenzofuran	ND	µg/L		0.5	0.1
			Dibromochloromethane	ND	µg/L		0.5	0.1
			Dibromomethane	ND	µg/L		0.5	0.1
			Dichlorodifluoromethane	ND	µg/L		0.5	0.1
			Dieldrin	ND	µg/L		0.01	0.003
			Diethyl ether	ND	µg/L		0.5	0.1
			Diethylphthalate	ND	µg/L		0.5	0.2
			Dimethylphthalate	ND	µg/L		0.5	0.2
			Di-n-butylphthalate	ND	µg/L		0.5	0.2
			Di-n-octylphthalate	ND	µg/L		0.5	0.2
			Dissolved Oxygen (DO)	1.02	mg/L		0.001	0.001
			Endosulfan I	ND	µg/L		0.01	0.002
			Endosulfan II	ND	µg/L		0.01	0.003
			Endosulfan sulfate	ND	µg/L		0.01	0.004
			Endrin	ND	µg/L		0.01	0.002
			Endrin aldehyde	ND	µg/L		0.01	0.001
			Endrin ketone	ND	µg/L		0.01	0.004
			Ethylbenzene	0.72	µg/L		0.5	0.1
			Ethylbenzene	1.03	µg/L		1	0.09
			Fluoranthene	ND	µg/L		0.5	0.1
			Fluorene	ND	µg/L		0.5	0.1
			Fluoride	0.380	mg/L		0.1	0.042
			gamma-BHC (Lindane)	ND	µg/L		0.01	0.001
			Hardness	91	mg/L as CaCO3		1	0.687
			Heptachlor	ND	µg/L		0.01	0.003
			Heptachlor epoxide	ND	µg/L		0.01	0.008
			Hexachlorobenzene	ND	µg/L		0.5	0.1
			Hexachlorobutadiene	ND	µg/L		0.5	0.1

TZOutlet- Comp (Effluent)	9/28/2017	13:57	Hexachlorobutadiene	ND	µg/L		0.5	0.1
			Hexachlorocyclopentadiene	ND	µg/L		0.5	0.1
			Hexachloroethane	ND	µg/L		0.5	0.1
			Hexane extractable material (HEM)	1.1	mg/L		1	0.5
			Indeno[1,2,3-cd]pyrene	ND	µg/L		0.5	0.1
			Iodomethane	ND	µg/L		0.5	0.1
			Iron	3.18	mg/L		0.02	0.005
			Isophorone	ND	µg/L		0.5	0.1
			Isopropylbenzene	ND	µg/L		0.5	0.1
			Lead	0.00126	mg/L		0.001	0.0001
			m+p-Xylene	ND	µg/L		0.5	0.1
			m+p-Xylene	ND	µg/L		2	0.22
			Magnesium	5.19	mg/L		0.1	0.0101
			Manganese	0.627	mg/L		0.005	0.00028
			Mercury-Trace	0.0584	µg/L		0.005	0.0002
			Methoxychlor	ND	µg/L		0.01	0.005
			Methyl ethyl ketone (MEK)	ND	µg/L		2.5	0.5
			Methyl isobutyl ketone (MIBK)	ND	µg/L		2.5	0.5
			Methylene chloride	ND	µg/L		0.5	0.1
			methyl-t-butyl ether (MTBE)	ND	µg/L		2.5	0.5
			methyl-t-butyl ether (MTBE)	ND	µg/L		1	0.11
			Molybdenum	0.0705	mg/L		0.001	0.00027
			Naphthalene	ND	µg/L		0.5	0.1
			Naphthalene	ND	µg/L		0.5	0.1
			n-Butylbenzene	ND	µg/L		0.5	0.1
			Nickel	0.00481	mg/L		0.001	0.0003
			Nitrobenzene	ND	µg/L		0.5	0.1
			Nitrobenzene	ND	µg/L		0.5	0.1
			Nitrosodimethylamine	ND	µg/L		0.5	0.1
			n-Nitroso-di-n-propylamine	ND	µg/L		0.5	0.1
			n-Nitrosodiphenylamine	ND	µg/L		0.5	0.1
			n-Propylbenzene	ND	µg/L		0.5	0.1
			o-Xylene	ND	µg/L		0.5	0.1
			o-Xylene	1.34	µg/L		1	0.16
			Pentachlorophenol	ND	µg/L		0.5	0.1
			pH	6.93	SU			1

TZOutlet- Comp (Effluent)	9/28/2017	13:57	Phenanthrene	ND	µg/L		0.5	0.1
			Phenol	ND	µg/L		0.5	0.1
			p-isopropyltoluene	ND	µg/L		0.5	0.1
			Pyrene	ND	µg/L		0.5	0.1
			Pyridine	ND	µg/L		0.5	0.2
			sec-Butylbenzene	ND	µg/L		0.5	0.1
			Selenium	ND	mg/L		0.001	0.00029
			Silver	ND	mg/L		0.001	0.00005
			Styrene	0.73	µg/L		0.5	0.1
			Sulfate	186	mg/L		2	0.055
			Sulfite	ND	mg/L		2	2
			Total Dissolved Solids (TDS)	901	mg/L		5	3.94
			tert-Butylbenzene	ND	µg/L		0.5	0.1
			Tetrachloroethene	ND	µg/L		0.5	0.1
			Thallium	ND	mg/L		0.001	0.00032
			Tin	ND	mg/L		0.01	0.002
			Titanium	0.00644	mg/L		0.001	0.0001
			Toluene	ND	µg/L		0.5	0.1
			Toluene	ND	µg/L		1	0.19
			Total BTEX	2.37	µg/L		1	0.09
			Phosphorus, Total	0.291	mg/L		0.1	0.005
			Total Xylene	ND	µg/L		0.5	0.1
			Toxaphene	ND	µg/L		0.1	0.05
			trans-1,2-Dichloroethene	ND	µg/L		0.5	0.1
			trans-1,3-Dichloropropene	ND	µg/L		0.5	0.1
			trans-1-4-Dichloro-2-butene	ND	µg/L		0.5	0.1
			Trichloroethene	ND	µg/L		0.5	0.1
			Trichlorofluoromethane	ND	µg/L		0.5	0.1
			Total Suspended Solids (TSS)	ND	mg/L		1	1
			Vinyl acetate	ND	µg/L		2.5	0.1
			Vinyl Chloride	ND	µg/L		0.5	0.1
			Zinc	0.00867	mg/L		0.001	0.00028

Notes:

J - Result is less than the reporting limit (RL) but greater than or equal to the method detection limit (MDL). The concentration is an approximate value.

ND - Result was not detected above MDL.

µg/L - micrograms per Liter

mg/L - milligrams per Liter

TABLE 2: ADDITIONAL EFFLUENT WATER QUALITY DATA

Sample Name	Date	Time	Lab Analysis	Reporting Limit (mg/L)	Detection Limit (mg/L)	Result (mg/L)
TZOutlet1010417	1/4/2017	12:49	Arsenic, Total	0.0010	0.00027	0.0120
TZOutlet1010417	1/4/2017	12:49	Chromium, Total	0.0004	0.00014	0.0012
TZOutlet1010417	1/4/2017	12:49	Lead, Total	0.0004	0.000034	0.0044
TZOutlet1010417	1/4/2017	12:49	Manganese, Total	0.0020	0.00035	0.1700
TZOutlet1021517	2/15/2017	10:37	Arsenic, Total	0.0010	0.00027	0.0150
TZOutlet1021517	2/15/2017	10:37	Chromium, Total	0.0004	0.00014	0.0014
TZOutlet1021517	2/15/2017	10:37	Lead, Total	0.0004	0.000034	0.0034
TZOutlet1021517	2/15/2017	10:37	Manganese, Total	0.0020	0.00035	0.3500
TZOutlet1030817	3/8/2017	11:11	Arsenic, Total	0.0010	0.00027	0.0110
TZOutlet1030817	3/8/2017	11:11	Chromium, Total	0.0004	0.00014	0.0008
TZOutlet1030817	3/8/2017	11:11	Lead, Total	0.0004	0.000034	<0.000034
TZOutlet1030817	3/8/2017	11:11	Manganese, Total	0.0020	0.00035	0.1300

Notes:

< - Analyte not detected above the Method Detection Limit (MDL).

mg/L - milligrams per Liter

TABLE 3: PROJECTED MAXIMUM EFFLUENT CONCENTRATIONS

Results					Statistical Analysis				
Analytes detected in TZOutlet-Comp (effluent sample)	Maximum concentration (if more than 1 sample)	Units	Unit conversion	Units	Number of Samples (n)	Coefficient of variation (CV)	Multiplying factor	Projected Maximum Concentration for RPA Analysis	Units
Alkalinity	401	mg/L	401000	µg/L	1	0.6	6.2	2486200	µg/L
Aluminum	0.0430	mg/L	43	µg/L	1	0.6	6.2	266.6	µg/L
Ammonia	0.125	mg/L	125	µg/L	1	0.6	6.2	775	µg/L
Arsenic	0.015	mg/L	15	µg/L	4	0.6	2.6	39	µg/L
Barium	0.0878	mg/L	87.8	µg/L	1	0.6	6.2	544.36	µg/L
Bis(2-ethylhexyl)phthalate	0.00086	mg/L	0.86	µg/L	1	0.6	6.2	5.332	µg/L
Boron	0.0271	mg/L	27.1	µg/L	1	0.6	6.2	168.02	µg/L
Chemical oxygen demand (COD)	21.1	mg/L	21100	µg/L	1	0.6	6.2	130820	µg/L
Chromium	0.0014	mg/L	1.4	µg/L	4	0.6	2.6	3.64	µg/L
Cobalt	0.00315	mg/L	3.15	µg/L	1	0.6	6.2	19.53	µg/L
Copper	0.00736	mg/L	7.36	µg/L	1	0.6	6.2	45.632	µg/L
Dissolved oxygen (DO)	1.02	mg/L	1020	µg/L	1	0.6	6.2	6324	µg/L
Ethylbenzene	0.00103	mg/L	1.03	µg/L	2	0.6	3.8	3.914	µg/L
Fluoride	0.380	mg/L	380	µg/L	1	0.6	6.2	2356	µg/L
Hardness	91	mg/L	91000	µg/L	1	0.6	6.2	564200	µg/L
Hexane extractable material (HEM)	1.1	mg/L	1100	µg/L	1	0.6	6.2	6820	µg/L
Iron	3.18	mg/L	3180	µg/L	1	0.6	6.2	19716	µg/L
Lead	0.0044	mg/L	4.4	µg/L	4	0.6	2.6	11.44	µg/L
Magnesium	5.19	mg/L	5190	µg/L	1	0.6	6.2	32178	µg/L
Manganese	0.627	mg/L	627	µg/L	4	0.6	2.6	1630.2	µg/L
Mercury	0.0000584	mg/L	0.0584	µg/L	1	0.6	6.2	0.36208	µg/L
Molybdenum	0.0705	mg/L	70.5	µg/L	1	0.6	6.2	437.1	µg/L
Nickel	0.00481	mg/L	4.81	µg/L	1	0.6	6.2	29.822	µg/L
o-Xylene	0.00134	mg/L	1.34	µg/L	1	0.6	6.2	8.308	µg/L
Phosphorus	0.291	mg/L	291	µg/L	1	0.6	6.2	1804.2	µg/L
Styrene	0.00073	mg/L	0.73	µg/L	1	0.6	6.2	4.526	µg/L
Sulfate	186	mg/L	186000	µg/L	1	0.6	6.2	1153200	µg/L
Total dissolved solids (TDS)	901	mg/L	901000	µg/L	1	0.6	6.2	5586200	µg/L
Titanium	0.00644	mg/L	6.44	µg/L	1	0.6	6.2	39.928	µg/L
Total BTEX	0.00237	mg/L	2.37	µg/L	1	0.6	6.2	14.694	µg/L
Zinc	0.00867	mg/L	8.67	µg/L	1	0.6	6.2	53.754	µg/L

Notes:

Metals results are reported as the total fraction.

Statistical analysis conducted in accordance with procedure outlined in "Technical Support Document for Water Quality-Based Toxics Control" published by EPA in March 1991. (EPA TDS)

Coefficient of variation selected to be 0.6 when number of samples, n, was less than 10. Value obtained from Box 3-2 of EPA TDS.

Multiplying factor based on a 95% confidence interval (referenced in Section 4.8 of Ecology Permit Writer's Manual).

Values obtained from Table 3-2 of EPA TDS.

BTEX - benzene, toluene, ethylbenzene, xylenes

µg/L - micrograms per liter

mg/L - milligrams per liter

TABLE 4: REASONABLE POTENTIAL ANALYSIS AT PIPE OUTFALLS

Analyte	Effluent		Screening Levels			Reasonable Potential?	
	Maximum Observed Concentration (µg/L)	Projected Maximum Concentration (µg/L)	Current NPDES Permit Limit (µg/L)	Minimum Human Health-Based Screening Level, if NPDES limit not available (µg/L)	Minimum Aquatic Life-Based Screening Level, if NPDES limit not available (µg/L)	Using Maximum Observed Concentration	Using Projected Maximum Concentration
Alkalinity	401000	2486200				-	-
Aluminum	43	266.6			87	no	yes
Ammonia-nitrogen	125	775				-	-
Arsenic	15	39	5			yes	yes
Barium	87.8	544.36		1000		no	no
Bis(2-Ethylhexyl)phthalate	0.86	5.332		1.2		no	yes
Boron	27.1	168.02				-	-
Chemical oxygen demand (COD)	21100	130820				-	-
Chromium	1.4	3.64	10			no	no
Cobalt	3.15	19.53				-	-
Copper	7.36	45.632		2880	3.47	yes	yes
Dissolved oxygen (DO)	1020	6324				-	-
Ethylbenzene	1.03	3.914		530		no	no
Fluoride	380	2356				-	-
Hardness	91000	564200				-	-
Hexane extractable material (HEM)	1100	6820				-	-
Iron	3180	19716		300	1000	yes	yes
Lead	4.4	11.44	5			no	yes
Magnesium	5190	32178				-	-
Manganese	627	1630.2	2240			no	no
Mercury-Trace	0.0584	0.36208		0.14	0.012	yes	yes
Molybdenum	70.5	437.1				-	-
Nickel	4.81	29.822				-	-
o-Xylene	1.34	8.308				-	-
Phosphorus, Total	291	1804.2				-	-
Styrene	0.73	4.526				-	-
Sulfate	186000	1153200				-	-
Total dissolved solids (TDS)	901000	5586200				-	-
Titanium	6.44	39.928				-	-
Total BTEX	2.37	14.694				-	-
Zinc	8.67	53.754		7400	32.29	no	yes

Notes:

If NPDES permit limit was available for an analyte, that limit was selected for the analysis.

If both human health-based and aquatic life-based screening levels were available, the lower of the two values was selected for the analysis.

TABLE 5: INPUTS FOR REASONABLE POTENTIAL ANALYSIS SPREADSHEET

"Input 1 - Flows & RW" Tab			
Parameter	Value		Basis
Facility Flow			
Annual Average	0.0114	MGD	EPA Form 2C
Max Monthly Average	0.086	MGD	EPA Form 2C
Daily Max	0.086	MGD	EPA Form 2C
Receiving Water Flow			
7Q10	35.6	cfs	Calculated during mixing zone study
3Q10	49.84	cfs	1.4 x 7Q10
Harmonic Mean	106.8	cfs	3 x 7Q10
Critical Data - Effluent			
Temperature	4.64	degrees C	Max value reported in EPA Form 2C
pH	7.4	S.U.	Average of values reported in EPA Form 2C
Alkalinity	401	mg/L as CaCO3	Sept 28, 2017 sample
Hardness	91	mg/L as CaCO3	Sept 28, 2017 sample
Critical Data - Receiving Water			
Temperature	6.5	degrees C	Mill Pond Dam reading Nov 15, 2017
pH	7	S.U.	Assumption
Alkalinity	88	mg/L as CaCO3	Sept 28, 2017 sample
Hardness	89	mg/L as CaCO3	Sept 28, 2017 sample

"Input 2 - Reasonable Potential Analysis" Tab			
Parameter	Value		Basis
Effluent Data			
Max Effluent Concentrations	see Table 2		
Receiving Water Data			
90th Percentile Concentration	no data/detections for analytes other than mercury and zinc		
Mercury	0.00524	µg/L	Sept 28, 2017 sample result (0.00304 ug/L) x 1.74
Zinc	0.219	µg/L	Sept 28, 2017 sample result (0.126 ug/L) x 1.74

ATTACHMENT A

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	401	mg CaCO3/L	5	10/6/2017 11:20:00 AM	KAE	SM2320B	
Aluminum	0.0430	mg/L	0.01	10/26/2017	HSW	EPA 200.8	
Ammonia-nitrogen	0.125	mg/L	0.02	10/2/2017 3:57:00 PM	TLM	SM4500NH3G	
Antimony	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Arsenic	0.0105	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Barium	0.0878	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Beryllium	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
BOD	<2	mg/L	2	10/4/2017 11:00:00 AM	KAE	SM5210B	
Boron	0.0271	mg/L	0.01	10/26/2017	HSW	EPA 200.8	
Cadmium	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Chromium	ND	mg/L	0.005	11/2/2017	HSW	EPA 200.8	
Cobalt	0.00315	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
COD	21.1	mg/L	5	10/11/2017 5:10:00 PM	KAE	EPA 410.4	
Copper	0.00736	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Cyanide	ND	mg/L	0.01	10/9/2017 10:25:00 AM	TLM	EPA 335.4	
2,3,7,8-TCDD	ND	pg/L	10	10/12/2017 2:43:00 AM	SUB	EPA 1613B	
Dissolved Oxygen	1.02	mg/L	0.001	9/29/2017 2:30:00 PM	KAE	SM4500OG	
Fluoride	0.380	mg/L	0.1	10/12/2017 1:11:00 PM	HMD	EPA 300.0	
Hexane extractable material (H	1.1	mg/L	1	10/3/2017	GGH	EPA 1664A	
Hardness	91	mg CaCO3/L	1	10/10/2017 3:10:00 PM	KAE	EPA 130.2	
Iron	3.18	mg/L	0.02	10/4/2017	SDR	EPA 200.7	
Lead	0.00126	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Magnesium	5.19	mg/L	0.1	10/4/2017	SDR	EPA 200.7	
Manganese	0.627	mg/L	0.005	11/2/2017	HSW	EPA 200.8	
Mercury-Trace	0.0584	ug/L	0.005	10/11/2017	SDR	EPA 1631e	
Molybdenum	0.0705	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Nickel	0.00481	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
pH	6.93	ph Units		9/29/2017 5:40:00 PM	KAE	SM 4500pH-B	
Selenium	ND	mg/L	0.001	10/31/2017	HSW	EPA 200.8	
Silver	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
TSS	<1	mg/L	1	10/5/2017 9:45:00 AM	ACS	SM 2540D	
TDS	901	mg/L	5	10/4/2017 3:30:00 PM	ACS	SM 2540C	
Sulfate	186	mg/L	2	10/14/2017 2:22:00 AM	HMD	EPA 300.0	
Sulfite	<2	mg/L	2	9/29/2017 2:00:00 PM	KAE	SM 4500 SO3B	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017	5:40 PM	
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date			
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Thallium	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Tin	ND	mg/L	0.01	10/26/2017	HSW	EPA 200.8	
Titanium	0.00644	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Total P	0.291	mg/L	0.1	10/3/2017 12:42:00 PM	TLM	SM4500PF	
Zinc	0.00867	mg/L	0.001	10/26/2017	HSW	EPA 200.8	

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Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	385	mg CaCO ₃ /L	5	10/6/2017 11:20:00 AM	KAE	SM2320B	
Aluminum	0.0596	mg/L	0.01	10/26/2017	HSW	EPA 200.8	
Ammonia-nitrogen	0.480	mg/L	0.02	10/2/2017 3:58:00 PM	TLM	SM4500NH3G	
Antimony	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Arsenic	0.00612	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Barium	0.0470	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Beryllium	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
BOD	<2	mg/L	2	10/4/2017 11:00:00 AM	KAE	SM5210B	
Boron	0.0276	mg/L	0.01	10/26/2017	HSW	EPA 200.8	
Cadmium	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Chromium	ND	mg/L	0.005	10/4/2017	HSW	EPA 200.8	
Cobalt	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
COD	31.0	mg/L	5	10/11/2017 5:10:00 PM	KAE	EPA 410.4	
Copper	0.0165	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Cyanide	ND	mg/L	0.01	10/9/2017 10:26:00 AM	TLM	EPA 335.4	
2,3,7,8-TCDD	ND	pg/L	5	10/12/2017 3:29:00 AM	SUB	EPA 1613B	
Dissolved Oxygen	1.93	mg/L	0.001	9/29/2017 2:30:00 PM	KAE	SM4500OG	
Fluoride	0.476	mg/L	0.1	10/12/2017 1:36:00 PM	HMD	EPA 300.0	
Hexane extractable material (H	ND	mg/L	1	10/3/2017	GGH	EPA 1664A	
Hardness	76	mg CaCO ₃ /L	1	10/10/2017 3:10:00 PM	KAE	EPA 130.2	
Iron	0.784	mg/L	0.1	10/4/2017	SDR	EPA 200.7	
Lead	0.00227	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Magnesium	5.43	mg/L	0.5	10/4/2017	SDR	EPA 200.7	
Manganese	0.231	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Mercury-Trace	0.0389	ug/L	0.0005	10/11/2017	SDR	EPA 1631e	
Molybdenum	0.164	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
Nickel	0.00724	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
pH	7.72	ph Units		9/29/2017 5:40:00 PM	KAE	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/4/2017	HSW	EPA 200.8	
Silver	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	
TSS	<1	mg/L	1	10/5/2017 9:45:00 AM	ACS	SM 2540D	
TDS	1100	mg/L	5	10/4/2017 3:30:00 PM	ACS	SM 2540C	
Sulfate	284	mg/L	2	10/14/2017 2:22:00 AM	HMD	EPA 300.0	
Sulfite	<2	mg/L	2	9/29/2017 2:00:00 PM	KAE	SM 4500 SO3B	
Thallium	ND	mg/L	0.001	10/26/2017	HSW	EPA 200.8	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Address: 520 PIKE ST, STE 1375
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Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017	5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date		
Matrix	Water	Sample Location				
Comments						
			</			

Sample Number	170929007-003	Sampling Date	9/28/2017	Date/Time Received	9/28/2017	5:40 PM	
Client Sample ID	MFCREEK092817	Sampling Time	3:23 PM	Extraction Date			
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	88	mg CaCO3/L	5	10/6/2017 11:20:00 AM	KAE	SM2320B	
Antimony	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Arsenic	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Beryllium	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Cadmium	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Chromium	ND	mg/L	0.005	11/2/2017	HSW	EPA 200.8	
Copper	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Hardness	89	mg CaCO3/L	1	10/10/2017 3:10:00 PM	KAE	EPA 130.2	
Lead	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Mercury-CVAFS	0.00304	ug/L	0.01	10/5/2017	SDR	EPA 245.7	J
Nickel	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
pH	7.95	ph Units		9/29/2017 5:40:00 PM	KAE	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/31/2017	HSW	EPA 200.8	
Thallium	ND	mg/L	0.005	10/26/2017	HSW	EPA 200.8	
Zinc	0.0126	mg/L	0.005	10/26/2017	HSW	EPA 200.8	

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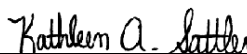
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Analytical Results Report

Authorized Signature


Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date	10/2/2017
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,2-Dichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,3-Dichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,4-Dichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1-Methylnaphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4,5-Trichlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4,6-Trichlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dichlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dimethylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dinitrophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dinitrotoluene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,6-Dinitrotoluene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Chloronaphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Chlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Methylnaphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Nitroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Nitrophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
3+4-Methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
3-Nitroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Bromophenyl-phenylether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Chloro-3-methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Chloroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Nitroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Nitrophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Acenaphthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Acenaphthylene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Aniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	

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Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date	10/2/2017
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Anthracene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzidine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo(ghi)perylene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[a]anthracene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[a]pyrene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[b]fluoranthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[k]fluoranthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzyl alcohol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-Ethylhexyl)phthalate	0.86	ug/L	0.5	10/5/2017	HSW	EPA 625	
Butylbenzylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Carbazole	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Chrysene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Dibenz[a,h]anthracene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Dibenzofuran	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Diethylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Dimethylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Di-n-butylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Di-n-octylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Fluoranthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Fluorene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachlorobutadiene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachlorocyclopentadiene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachloroethane	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Isophorone	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Naphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Nitrobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Nitrosodimethylamine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
n-Nitrosodiphenylamine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Pentachlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017		Date/Time Received	9/28/2017 5:40 PM		
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM		Extraction Date	10/2/2017		
Matrix	Water	Sample Location						
Comments								
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenanthrene		ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Phenol		ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Pyrene		ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Pyridine		ND	ug/L	0.5	10/5/2017	HSW	EPA 625	

Surrogate Data

Sample Number	170929007-001			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 625	64.6	53-125	
2-Fluorobiphenyl	EPA 625	74.8	12-116	
2-Fluorophenol	EPA 625	50.4	10-139	
Nitrobenzene-d5	EPA 625	76.0	49-118	
Phenol-d5	EPA 625	63.0	28-154	
Terphenyl-d14	EPA 625	117.2	20-137	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	10/2/2017
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,2-Dichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,3-Dichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1,4-Dichlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
1-Methylnaphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4,5-Trichlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4,6-Trichlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dichlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dimethylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dinitrophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,4-Dinitrotoluene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2,6-Dinitrotoluene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Chloronaphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Chlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Methylnaphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Nitroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
2-Nitrophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
3+4-Methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
3-Nitroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Bromophenyl-phenylether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Chloro-3-methylphenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Chloroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Nitroaniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
4-Nitrophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Acenaphthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Acenaphthylene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Aniline	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Anthracene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	10/2/2017
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo(ghi)perylene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[a]anthracene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[a]pyrene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[b]fluoranthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzo[k]fluoranthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Benzyl alcohol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Butylbenzylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Carbazole	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Chrysene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Dibenz[a,h]anthracene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Dibenzofuran	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Diethylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Dimethylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Di-n-butylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Di-n-octylphthalate	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Fluoranthene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Fluorene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachlorobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachlorobutadiene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachlorocyclopentadiene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Hexachloroethane	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Isophorone	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Naphthalene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Nitrobenzene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Nitrosodimethylamine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
n-Nitrosodiphenylamine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Pentachlorophenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Phenanthrene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report


Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	10/2/2017
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenol	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Pyrene	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	
Pyridine	ND	ug/L	0.5	10/5/2017	HSW	EPA 625	

Surrogate Data

Sample Number	170929007-002		
Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 625	67.2	53-125
2-Fluorobiphenyl	EPA 625	77.6	12-116
2-Fluorophenol	EPA 625	55.0	10-139
Nitrobenzene-d5	EPA 625	78.8	49-118
Phenol-d5	EPA 625	64.8	28-154
Terphenyl-d14	EPA 625	131.2	20-137

Authorized Signature


Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
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Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1,2-Tetrachloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,1,1-Trichloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,1,2-Trichloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,1-Dichloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,1-Dichloroethene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,1-dichloropropene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2,3-Trichlorobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2,3-Trichloropropane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2,4-Trichlorobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2,4-Trimethylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2-Dibromo-3-chloropropane(DBCP)	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2-Dibromoethane (EDB)	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2-Dichlorobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2-Dichloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,2-Dichloropropane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,3,5-Trimethylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,3-Dichlorobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,3-Dichloropropane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1,4-Dichlorobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
1-Methylnaphthalene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
2,2-Dichloropropane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
2-Chloroethyl vinyl ether	ND	ug/L	20	0/11/2017 11:33:00 PM	ACS	EPA 624	
2-Chlorotoluene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
2-hexanone	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
2-Methylnaphthalene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
4-Chlorotoluene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Acetone	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Acetonitrile	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Acrolein	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Acrylonitrile	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Benzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Bromobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Bromochloromethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
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Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Bromodichloromethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Bromoform	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Bromomethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Carbon disulfide	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Carbon Tetrachloride	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Chlorobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Chloroethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Chloroform	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Chloromethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
cis-1,2-dichloroethene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
cis-1,3-Dichloropropene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Dibromochloromethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Dibromomethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Dichlorodifluoromethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Diethyl ether	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Ethylbenzene	0.72	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Hexachlorobutadiene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Iodomethane	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Isopropylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
m+p-Xylene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Methyl ethyl ketone (MEK)	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Methyl isobutyl ketone (MIBK)	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Methylene chloride	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
methyl-t-butyl ether (MTBE)	ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Naphthalene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
n-Butylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Nitrobenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
n-Propylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
o-Xylene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
p-isopropyltoluene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
sec-Butylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Styrene	0.73	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
tert-Butylbenzene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Tetrachloroethene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Toluene	ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017		Date/Time Received	9/28/2017 5:40 PM		
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM		Extraction Date			
Matrix	Water	Sample Location						
Comments								
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Total Xylene		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
trans-1,2-Dichloroethene		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
trans-1,3-Dichloropropene		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
trans-1-4-Dichloro-2-butene		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Trichloroethene		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Trichlorofluoromethane		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Vinyl acetate		ND	ug/L	2.5	0/11/2017 11:33:00 PM	ACS	EPA 624	
Vinyl Chloride		ND	ug/L	0.5	0/11/2017 11:33:00 PM	ACS	EPA 624	

Surrogate Data

Sample Number	170929007-001			
Surrogate Standard	Method	Percent Recovery	Control Limits	
1,2-Dichlorobenzene-d4	EPA 624	104.8	70-130	
4-Bromofluorobenzene	EPA 624	97.8	70-130	
Toluene-d8	EPA 624	101.2	70-130	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1,2-Tetrachloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,1,1-Trichloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,1,2-Trichloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,1-Dichloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,1-Dichloroethene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,1-dichloropropene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2,3-Trichlorobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2,3-Trichloropropane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2,4-Trichlorobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2,4-Trimethylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2-Dibromo-3-chloropropane(DBCP)	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2-Dibromoethane (EDB)	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2-Dichlorobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2-Dichloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,2-Dichloropropane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,3,5-Trimethylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,3-Dichlorobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,3-Dichloropropane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1,4-Dichlorobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
1-Methylnaphthalene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
2,2-Dichloropropane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
2-Chloroethyl vinyl ether	ND	ug/L	20	0/11/2017 12:03:00 AM	ACS	EPA 624	
2-Chlorotoluene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
2-hexanone	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
2-Methylnaphthalene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
4-Chlorotoluene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Acetone	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Acetonitrile	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Acrolein	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Acrylonitrile	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Benzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Bromobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Bromochloromethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Bromodichloromethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Bromoform	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Bromomethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Carbon disulfide	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Carbon Tetrachloride	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Chlorobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Chloroethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Chloroform	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Chloromethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
cis-1,2-dichloroethene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
cis-1,3-Dichloropropene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Dibromochloromethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Dibromomethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Dichlorodifluoromethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Diethyl ether	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Ethylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Hexachlorobutadiene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Iodomethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Isopropylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
m+p-Xylene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Methyl ethyl ketone (MEK)	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Methyl isobutyl ketone (MIBK)	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Methylene chloride	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
methyl-t-butyl ether (MTBE)	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Naphthalene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
n-Butylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Nitrobenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
n-Propylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
o-Xylene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
p-isopropyltoluene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
sec-Butylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Styrene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
tert-Butylbenzene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Tetrachloroethene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Toluene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
Total Xylene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017		Date/Time Received	9/28/2017 5:40 PM		
Client Sample ID	TZ302092817	Sampling Time	2:45 PM		Extraction Date			
Matrix	Water	Sample Location						
Comments								
	Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
	trans-1,2-Dichloroethene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
	trans-1,3-Dichloropropene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
	trans-1-4-Dichloro-2-butene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
	Trichloroethene	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
	Trichlorofluoromethane	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
	Vinyl acetate	ND	ug/L	2.5	0/11/2017 12:03:00 AM	ACS	EPA 624	
	Vinyl Chloride	ND	ug/L	0.5	0/11/2017 12:03:00 AM	ACS	EPA 624	

Surrogate Data

Sample Number	170929007-002			
Surrogate Standard	Method	Percent Recovery	Control Limits	
1,2-Dichlorobenzene-d4	EPA 624	102.0	70-130	
4-Bromofluorobenzene	EPA 624	97.6	70-130	
Toluene-d8	EPA 624	101.8	70-130	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-004	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TRIP BLANKS	Sampling Time		Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1,2-Tetrachloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,1,1-Trichloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,1,2-Trichloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,1-Dichloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,1-Dichloroethene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,1-dichloropropene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2,3-Trichlorobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2,3-Trichloropropane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2,4-Trichlorobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2,4-Trimethylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2-Dibromo-3-chloropropane(DBCP)	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2-Dibromoethane (EDB)	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2-Dichlorobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2-Dichloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,2-Dichloropropane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,3,5-Trimethylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,3-Dichlorobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,3-Dichloropropane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1,4-Dichlorobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
1-Methylnaphthalene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
2,2-Dichloropropane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
2-Chloroethyl vinyl ether	ND	ug/L	20	0/12/2017 12:33:00 AM	ACS	EPA 624	
2-Chlorotoluene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
2-hexanone	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
2-Methylnaphthalene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
4-Chlorotoluene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Acetone	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Acetonitrile	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Acrolein	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Acrylonitrile	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Benzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Bromobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Bromochloromethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Bromodichloromethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-004	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TRIP BLANKS	Sampling Time		Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Bromoform	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Bromomethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Carbon disulfide	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Carbon Tetrachloride	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Chlorobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Chloroethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Chloroform	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Chloromethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
cis-1,2-dichloroethene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
cis-1,3-Dichloropropene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Dibromochloromethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Dibromomethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Dichlorodifluoromethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Diethyl ether	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Ethylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Hexachlorobutadiene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Iodomethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Isopropylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
m+p-Xylene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Methyl ethyl ketone (MEK)	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Methyl isobutyl ketone (MIBK)	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Methylene chloride	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
methyl-t-butyl ether (MTBE)	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Naphthalene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
n-Butylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Nitrobenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
n-Propylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
o-Xylene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
p-isopropyltoluene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
sec-Butylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Styrene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
tert-Butylbenzene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Tetrachloroethene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Toluene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Total Xylene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

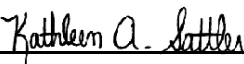
Sample Number	170929007-004	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TRIP BLANKS	Sampling Time		Extraction Date	
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
trans-1,2-Dichloroethene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
trans-1,3-Dichloropropene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
trans-1-4-Dichloro-2-butene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Trichloroethene	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Trichlorofluoromethane	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Vinyl acetate	ND	ug/L	2.5	0/12/2017 12:33:00 AM	ACS	EPA 624	
Vinyl Chloride	ND	ug/L	0.5	0/12/2017 12:33:00 AM	ACS	EPA 624	

Surrogate Data

Sample Number	170929007-004		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 624	102.4	70-130
4-Bromofluorobenzene	EPA 624	96.6	70-130
Toluene-d8	EPA 624	98.8	70-130

Authorized Signature


Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM		
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM	Extraction Date	10/3/2017		
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
4,4-DDD	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
4,4-DDE	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
4,4-DDT	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Aldrin	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
alpha-BHC	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Aroclor 1016 (PCB-1016)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1221 (PCB-1221)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1232 (PCB-1232)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1242 (PCB-1242)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1248 (PCB-1248)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1254 (PCB-1254)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1260 (PCB-1260)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
beta-BHC	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Chlordane	ND	ug/L	0.1	10/10/2017	MAH	EPA 608	
delta-BHC	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Dieldrin	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endosulfan I	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endosulfan II	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endosulfan sulfate	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endrin	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endrin aldehyde	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endrin ketone	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
gamma-BHC (Lindane)	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Heptachlor	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Heptachlor epoxide	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Methoxychlor	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Toxaphene	ND	ug/L	0.1	10/10/2017	MAH	EPA 608	

Surrogate Data

Sample Number	170929007-001		
Surrogate Standard		Method	Percent Recovery
DCB		EPA 608	66.4
			Control Limits
			30-130

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date	10/3/2017
Matrix	Water	Sample Location			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
4,4-DDD	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
4,4-DDE	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
4,4-DDT	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Aldrin	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
alpha-BHC	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Aroclor 1016 (PCB-1016)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1221 (PCB-1221)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1232 (PCB-1232)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1242 (PCB-1242)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1248 (PCB-1248)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1254 (PCB-1254)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
Aroclor 1260 (PCB-1260)	ND	ug/L	0.2	10/10/2017	MAH	EPA 608	
beta-BHC	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Chlordane	ND	ug/L	0.1	10/10/2017	MAH	EPA 608	
delta-BHC	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Dieldrin	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endosulfan I	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endosulfan II	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endosulfan sulfate	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endrin	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endrin aldehyde	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Endrin ketone	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
gamma-BHC (Lindane)	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Heptachlor	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Heptachlor epoxide	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Methoxychlor	ND	ug/L	0.01	10/10/2017	MAH	EPA 608	
Toxaphene	ND	ug/L	0.1	10/10/2017	MAH	EPA 608	

Surrogate Data

Sample Number	170929007-002		
Surrogate Standard		Method	Percent Recovery
DCB		EPA 608	76.2
			Control Limits
			30-130

Anatek Labs, Inc.

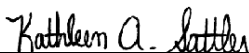
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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
SEATTLE, WA 98101
Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Authorized Signature



Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

Analytical Results Report

Sample Number	170929007-001	Sampling Date	9/28/2017		Date/Time Received	9/28/2017 5:40 PM		
Client Sample ID	TZCOMP092817	Sampling Time	1:57 PM		Extraction Date			
Matrix	Water	Sample Location						
Comments								
	Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
	Benzene	<1.0	µg/L	1	10/6/2017 10:35:00 PM	ACS	EPA 8021	
	Ethylbenzene	1.03	µg/L	1	10/6/2017 10:35:00 PM	ACS	EPA 8021	
	m+p-Xylene	<2.0	µg/L	2	10/6/2017 10:35:00 PM	ACS	EPA 8021	
	methyl-t-butyl ether (MTBE)	<1.0	µg/L	1	10/6/2017 10:35:00 PM	ACS	EPA 8021	
	o-Xylene	1.34	µg/L	1	10/6/2017 10:35:00 PM	ACS	EPA 8021	
	Toluene	<1.0	µg/L	1	10/6/2017 10:35:00 PM	ACS	EPA 8021	
	Total BTEX	2.37	µg/L	1	10/6/2017 10:35:00 PM	ACS	EPA 8021	

Surrogate Data

Sample Number	170929007-001			
Surrogate Standard		Method	Percent Recovery	Control Limits
4-Bromofluorobenzene		EPA 8021	102.0	70-130

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Client: GEOSYNTEC - SEATTLE
Address: 520 PIKE ST, STE 1375
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Attn: BRIAN PETTY

Batch #: 170929007
Project Name: HR0996C-01-1415

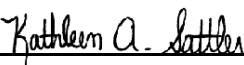
Analytical Results Report

Sample Number	170929007-002	Sampling Date	9/28/2017	Date/Time Received	9/28/2017 5:40 PM		
Client Sample ID	TZ302092817	Sampling Time	2:45 PM	Extraction Date			
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	<1.0	µg/L	1	10/6/2017 11:13:00 PM	ACS	EPA 8021	
Ethylbenzene	<1.0	µg/L	1	10/6/2017 11:13:00 PM	ACS	EPA 8021	
m+p-Xylene	<2.0	µg/L	2	10/6/2017 11:13:00 PM	ACS	EPA 8021	
methyl-t-butyl ether (MTBE)	<1.0	µg/L	1	10/6/2017 11:13:00 PM	ACS	EPA 8021	
o-Xylene	<1.0	µg/L	1	10/6/2017 11:13:00 PM	ACS	EPA 8021	
Toluene	<1.0	µg/L	1	10/6/2017 11:13:00 PM	ACS	EPA 8021	
Total BTEX	<1.0	µg/L	1	10/6/2017 11:13:00 PM	ACS	EPA 8021	

Surrogate Data

Sample Number	170929007-002			
Surrogate Standard		Method	Percent Recovery	Control Limits
4-Bromofluorobenzene		EPA 8021	103.0	70-130

Authorized Signature


Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Login Report

Customer Name: GEOSYNTEC - SEATTLE

Order ID: 170929007

520 PIKE ST, STE 1375

Order Date: 9/29/2017

SEATTLE

WA

98101

Contact Name: BRIAN PETTY

Project Name: HR0996C-01-1415

Comment: 625/608/HG/HG-TRACE/ICP METALS/FOG SUBCONTRACTED
TO ANATEK-M. DIOXIN SUBCONTRACTED TO PACE-MN.

Sample #: 170929007-001 **Customer Sample #:** TZCOMP092817

Recv'd:



Matrix: Water

Collector: F RORIE

Date Collected: 9/28/2017

Quantity: 18

Date Received: 9/28/2017 5:40:00 PM

Time Collected: 1:57 PM

Comment:

Test	Lab	Method	Due Date	Priority
624 VOLATILES IN WW	S	EPA 624	10/11/2017	<u>Normal (~10 Days)</u>
ALKALINITY	S	SM2320B	10/11/2017	<u>Normal (~10 Days)</u>
ALUMINUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
AMMONIA-NITROGEN SPOA	S	SM4500NH3G	10/11/2017	<u>Normal (~10 Days)</u>
ANTIMONY	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
ARSENIC	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BARIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BERYLLIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BOD	S	SM5210B	10/11/2017	<u>Normal (~10 Days)</u>
BORON	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BTEX 8021	S	EPA 8021	10/11/2017	<u>Normal (~10 Days)</u>
CADMIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
CHROMIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
COBALT	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
COD - CHEMICAL OXYGEN DEMAND	S	EPA 410.4	10/11/2017	<u>Normal (~10 Days)</u>
COPPER	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
CYANIDE TOTAL EPA	S	EPA 335.4	10/11/2017	<u>Normal (~10 Days)</u>
DIOXIN	S	EPA 1613B	10/11/2017	<u>Normal (~10 Days)</u>
DISSOLVED OXYGEN	S	SM4500OG	10/11/2017	<u>Normal (~10 Days)</u>
FLUORIDE	S	EPA 300.0	10/11/2017	<u>Normal (~10 Days)</u>
FOG - HEM	M	EPA 1664A	10/11/2017	<u>Normal (~10 Days)</u>
HARDNESS EPA 130.2	S	EPA 130.2	10/11/2017	<u>Normal (~10 Days)</u>
IRON ICP	M	EPA 200.7	10/11/2017	<u>Normal (~10 Days)</u>

Customer Name: GEOSYNTEC - SEATTLE

520 PIKE ST, STE 1375

SEATTLE

WA

98101

Order ID: 170929007

Order Date: 9/29/2017

Contact Name: BRIAN PETTY

Project Name: HR0996C-01-1415

Comment: 625/608/HG/HG-TRACE/ICP METALS/FOG SUBCONTRACTED
TO ANATEK-M. DIOXIN SUBCONTRACTED TO PACE-MN.

LEAD	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
MAGNESIUM ICP	M	EPA 200.7	10/11/2017	<u>Normal (~10 Days)</u>
MANGANESE	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
MERCURY-TRACE	M	EPA 1631e	10/11/2017	<u>Normal (~10 Days)</u>
MOLYBDENUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
NICKEL	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
OC PEST/PCB 608	M	EPA 608	10/11/2017	<u>Normal (~10 Days)</u>
pH	S	SM 4500pH-B	10/11/2017	<u>Normal (~10 Days)</u>
SELENIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
SEMIVOLATILES 625	M	EPA 625	10/11/2017	<u>Normal (~10 Days)</u>
SILVER	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
SOLIDS - TSS	S	SM 2540D	10/11/2017	<u>Normal (~10 Days)</u>
SOLIDS-TDS SPO	S	SM 2540C	10/11/2017	<u>Normal (~10 Days)</u>
SULFATE	S	EPA 300.0	10/11/2017	<u>Normal (~10 Days)</u>
SULFITE	S	SM 4500 SO3B	10/11/2017	<u>Normal (~10 Days)</u>
THALLIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
TIN	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
TITANIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
TOTAL P FIA	S	SM4500PF	10/11/2017	<u>Normal (~10 Days)</u>
ZINC	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>

Sample #: 170929007-002 **Customer Sample #:** TZ302092817

Recv'd: ☒ **Matrix:** Water

Collector: F RORIE

Date Collected: 9/28/2017

Quantity: 18 **Date Received:** 9/28/2017 5:40:00 PM

Time Collected: 2:45 PM

Comment:

Test	Lab	Method	Due Date	Priority
624 VOLATILES IN WW	S	EPA 624	10/11/2017	<u>Normal (~10 Days)</u>
ALKALINITY	S	SM2320B	10/11/2017	<u>Normal (~10 Days)</u>
ALUMINUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
AMMONIA-NITROGEN SPOA	S	SM4500NH3G	10/11/2017	<u>Normal (~10 Days)</u>
ANTIMONY	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
ARSENIC	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BARIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BERYLLIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BOD	S	SM5210B	10/11/2017	<u>Normal (~10 Days)</u>
BORON	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>

Customer Name: GEOSYNTEC - SEATTLE

520 PIKE ST, STE 1375

SEATTLE

WA

98101

Order ID: 170929007

Order Date: 9/29/2017

Contact Name: BRIAN PETTY

Project Name: HR0996C-01-1415

Comment: 625/608/HG/HG-TRACE/ICP METALS/FOG SUBCONTRACTED
TO ANATEK-M. DIOXIN SUBCONTRACTED TO PACE-MN.

BTEX 8021	S	EPA 8021	10/11/2017	<u>Normal (~10 Days)</u>
CADMIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
CHROMIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
COBALT	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
COD - CHEMICAL OXYGEN DEMAND	S	EPA 410.4	10/11/2017	<u>Normal (~10 Days)</u>
COPPER	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
CYANIDE TOTAL EPA	S	EPA 335.4	10/11/2017	<u>Normal (~10 Days)</u>
DIOXIN	S	EPA 1613B	10/11/2017	<u>Normal (~10 Days)</u>
DISSOLVED OXYGEN	S	SM4500OG	10/11/2017	<u>Normal (~10 Days)</u>
FLUORIDE	S	EPA 300.0	10/11/2017	<u>Normal (~10 Days)</u>
FOG - HEM	M	EPA 1664A	10/11/2017	<u>Normal (~10 Days)</u>
HARDNESS EPA 130.2	S	EPA 130.2	10/11/2017	<u>Normal (~10 Days)</u>
IRON ICP	M	EPA 200.7	10/11/2017	<u>Normal (~10 Days)</u>
LEAD	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
MAGNESIUM ICP	M	EPA 200.7	10/11/2017	<u>Normal (~10 Days)</u>
MANGANESE	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
MERCURY-TRACE	M	EPA 1631e	10/11/2017	<u>Normal (~10 Days)</u>
MOLYBDENUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
NICKEL	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
OC PEST/PCB 608	M	EPA 608	10/11/2017	<u>Normal (~10 Days)</u>
pH	S	SM 4500pH-B	10/11/2017	<u>Normal (~10 Days)</u>
SELENIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
SEMIVOLATILES 625	M	EPA 625	10/11/2017	<u>Normal (~10 Days)</u>
SILVER	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
SOLIDS - TSS	S	SM 2540D	10/11/2017	<u>Normal (~10 Days)</u>
SOLIDS-TDS SPO	S	SM 2540C	10/11/2017	<u>Normal (~10 Days)</u>
SULFATE	S	EPA 300.0	10/11/2017	<u>Normal (~10 Days)</u>
SULFITE	S	SM 4500 SO3B	10/11/2017	<u>Normal (~10 Days)</u>
THALLIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
TIN	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
TITANIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
TOTAL P FIA	S	SM4500PF	10/11/2017	<u>Normal (~10 Days)</u>
ZINC	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>

Customer Name: GEOSYNTEC - SEATTLE

520 PIKE ST, STE 1375

SEATTLE

WA

98101

Order ID: 170929007

Order Date: 9/29/2017

Contact Name: BRIAN PETTY

Project Name: HR0996C-01-1415

Comment: 625/608/HG/HG-TRACE/ICP METALS/FOG SUBCONTRACTED
TO ANATEK-M. DIOXIN SUBCONTRACTED TO PACE-MN.

Sample #: 170929007-003 **Customer Sample #:** MFCREEK092817

Recv'd: ☒

Matrix: Water

Collector: F RORIE

Date Collected: 9/28/2017

Quantity: 3

Date Received: 9/28/2017 5:40:00 PM

Time Collected: 3:23 PM

Comment:

Test	Lab	Method	Due Date	Priority
ALKALINITY	S	SM2320B	10/11/2017	<u>Normal (~10 Days)</u>
ANTIMONY	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
ARSENIC	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
BERYLLIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
CADMIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
CHROMIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
COPPER	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
HARDNESS EPA 130.2	S	EPA 130.2	10/11/2017	<u>Normal (~10 Days)</u>
LEAD	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
MERCURY-CVAFS	M	EPA 245.7	10/11/2017	<u>Normal (~10 Days)</u>
NICKEL	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
pH	S	SM 4500pH-B	10/11/2017	<u>Normal (~10 Days)</u>
SELENIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
THALLIUM	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>
ZINC	S	EPA 200.8	10/11/2017	<u>Normal (~10 Days)</u>

Sample #: 170929007-004 **Customer Sample #:** TRIP BLANKS

Recv'd: ☒

Matrix: Water

Collector: F RORIE

Date Collected: 9/28/2017

Quantity: 4

Date Received: 9/28/2017 5:40:00 PM

Time Collected:

Comment:

Test	Lab	Method	Due Date	Priority
624 VOLATILES IN WW	S	EPA 624	10/11/2017	<u>Normal (~10 Days)</u>

Customer Name: GEOSYNTEC - SEATTLE

520 PIKE ST, STE 1375

SEATTLE

WA

98101

Order ID: 170929007

Order Date: 9/29/2017

Contact Name: BRIAN PETTY

Project Name: HR0996C-01-1415

Comment: 625/608/HG/HG-TRACE/ICP METALS/FOG SUBCONTRACTED
TO ANATEK-M. DIOXIN SUBCONTRACTED TO PACE-MN.

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature of the sample(s)? (°C)	7.3/7.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes
Total number of containers?	43



Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E. Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

70929 007 **GEOS** Last Due 10/11/2017
1st SAMP 9/28/2017 1st RCVD 9/28/2017
FR0996C-01-1415

Company Name: Geosyntec Consultants				Project Manager: Brian Petty				Turn Around Time & Reporting			
Address: 520 Pike St Ste 1375				Project Name & #: HR0996C-01-1415				Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp			
City: Seattle State: WA Zip: 98101				Email Address: Ajagosz@geosyntec.com				<input checked="" type="checkbox"/> Normal <input type="checkbox"/> Next Day* <input type="checkbox"/> 2nd Day* <input type="checkbox"/> Other*			
Phone: 206-496-1447 / 360 509 2787				Purchase Order #: HR0996C				*All rush order requests must be prior approved.			
Fax:				Sampler Name & phone: F. Rorie 360 509 2787				<input type="checkbox"/> Phone <input type="checkbox"/> Mail <input type="checkbox"/> Fax <input type="checkbox"/> Email			
Provide Sample Description				List Analyses Requested				Note Special Instructions/Comments			
				<div>Preservative: # of Containers Sample Volume See Attach Quote/ Email</div>				SWBS M-FOG/ICP Metals/Hg/Hg-Trace 625/608 Pace MN-DIOXIN S-REST			
Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	See Attach	Quote/ Email				
	TZComp092817	9/28/17-1357	W 18	20	1	X	X				
	TZ302092817	9/28/17-1445	W 18	20	1	X	X				
	MFCrepK092817	9/28/17-1523	W 18	3	1	X	X				
	Trip Blank	FAR									
								Trips - 4			
								Inspection Checklist			
								Received Intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
								Labels & Chains Agree? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
								Containers Sealed? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
								VOC Head Space? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N			
								HO, Code, Ice <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
								Temperature (°C): 7.3°C / 40°C IR #1			
								Preservative: 16, HCl, H₂SO₄ 309-1 <2			
								NaOH P1311-7 >11 + P258-1 <2 PH P16230-7H			
								Date & Time: 9-28-17 17:45			
								Inspected By: Am Wag 1049			
Printed Name				Signature				Company			
Relinquished by: Frank Rorie								Geosyntec			
Received by: Andrew Marder								Anatek Labs			
Relinquished by:											
Received by:											
Relinquished by:											
Received by:											

Wendy Ozminkowski

From: Kathy Sattler
Sent: Monday, September 25, 2017 3:57 PM
To: Wendy Ozminkowski
Subject: Fwd: Revised Metaline Falls bottle order

Sent from my iPhone

Begin forwarded message:

From: "Adrianna M. Jarosz" <AJarosz@Geosyntec.com>
Date: September 25, 2017 at 3:18:45 PM PDT
To: Kathy Sattler <kathy@anateklabs.com>
Cc: Frank Rorie <FRorie@Geosyntec.com>
Subject: Revised Metaline Falls bottle order

Hi Kathy,

Could I please revise the Metaline Falls bottle order to also include a 3rd water sample, this one to be analyzed for a shorter list of analytes:

- ✓ • Alkalinity
- ✓ • Hardness
- ✓ • pH
- ✓ • and the following metals (total):
 - ✓ antimony
 - ✓ arsenic
 - ✓ beryllium
 - ✓ cadmium
 - ✓ chromium
 - ✓ copper
 - ✓ lead
 - ✓ ○ ✓ mercury
 - ✓ nickel
 - ✓ selenium
 - ✓ thallium
 - ✓ zinc

Thanks!
 Adrianna

Adrianna Jarosz, EIT
 Senior Staff Engineer
 Geosyntec Consultants
 Seattle, WA
 206-496-1447
www.geosyntec.com

70929 007
 GEOS
 Last Due 10/11/2017
 1st SAMP 9/28/2017 1st RCVD 9/28/2017
 R0996C-01-1415

9/25/2017

Anatek Labs, Inc.

E. 504 Sprague Ave. Spokane, WA 99202 (509) 838-3999 Fax: (509) 838-4433

Quotation For Analytical Services

Client: Geosyntec
Address:
City/State: Seattle, WA
Attn: Adrianna Jarosz
Phone: 509-206-1447
Date: 22-Sep-17

Quotation Number:

170922geos

<u>Analyte (Waste Water)</u>	<u>Method</u>	<u>Cost / Sample</u>
✓ BOD	SM 5210 B	\$35.00
✓ COD	EPA 410.4	\$35.00
✓ TSS (Total Suspended Solids)	EPA 160.2	\$15.00
✓ Ammonia	SM 4500 NH3G	\$20.00
✓ Dissolved Oxygen	SM4500-OG	\$10.00
✓ pH	SM4500-H B	\$10.00
✓ Alkalinity	SM2320B	\$15.00
✓ Ions (Sulfate, Fluoride)	EPA 300.0	\$20 for the first ion/\$5 for each additional
✓ Total Phosphorus	EPA 365.3	\$30.00
✓ FOG	EPA 1664A	\$60.00
✓ Sulfite	SM4500-S03B	\$40.00
✓ TDS	SM2540C	\$20.00
✓ Hardness	SM2340C	\$42.00
✓ Metals (Al, Ba, Bo, Co, Mo, Mn, Sn, Ti, Sb, As, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, Ti, Zn)	EPA 200.8	\$12 for the first metal/\$12 for each additional
✓ Metals (Fe, Mg)	EPA 200.7	\$12 for the first metal/\$12 for each additional
✓ Mercury	EPA 1631E	\$100.00
✓ BTEX	EPA 8021	\$100.00
✓ Cyanide	EPA 335.4	\$40.00
✓ BNA (Base, Acid, Neutral)	EPA 625	\$325.00
✓ VOC	EPA 624	\$160.00
✓ 2,3,7,8-TCDD	EPA 1613	\$650.00
✓ Pesticides/PCB's	EPA 608	\$175.00

Anatek Labs, Inc. promises to meet or beat any published price for comparable analyses.

Dear Adrianna,

Thank you for contacting Anatek Labs, Inc. for a quote on water analyses. Above, please find our quote for wastewater analyses you requested. These analyses include sampling containers some of which will be preserved and our normal turn-around time for wastewater which is 5 - 7 working days. The samples need to be received by the lab within 24 hours of sampling to meet holding times.

If you have any questions or if I can provide further information, please call me at 509-838-3999.

170929 007
1st SAMP 9/28/2017 1st RCVD 9/28/2017
F-R0996C-01-1415
Last Due 10/11/2017
GEOS

ATTACHMENT B

ATTACHMENT B: SURFACE WATER SCREENING LEVELS FROM CLARC TABLES

Analyte	Human Health-Based Screening Levels						Aquatic Life-Based Screening Levels					
	Surface Water Method B Non cancer (µg/L)	Surface Water Method B Cancer (µg/L)	Surface Water Method C Non cancer (µg/L)	Surface Water Method C Cancer (µg/L)	Surface Water Human Health Fresh Water CWA §304 (µg/L)	Water Human Health Fresh Water NTR 40 CFR 131 (µg/L)	Surface Water Aquatic Life Fresh/Acute 173-201A WAC (µg/L)	Surface Water Aquatic Life Fresh/Acute CWA §304 (µg/L)	Surface Water Aquatic Life Fresh/Acute NTR 40 CFR 131 (µg/L)	Surface Water Aquatic Life Fresh/Chronic 173-201A WAC (µg/L)	Surface Water Aquatic Life Fresh/Chronic CWA §304 (µg/L)	Surface Water Aquatic Life Fresh/Chronic NTR 40 CFR 131 (µg/L)
Alkalinity												
Aluminum								750			87	
Ammonia-nitrogen												
Barium					1000.00							
Bis(2-Ethylhexyl)phthalate	398.86	3.56	997.15	89.03	1.20	1.80						
Boron												
Chemical oxygen demand (COD)												
Cobalt												
Copper	2880.00		7230.00				4.61	13	17	3.47	9	11
Dissolved oxygen (DO)												
Ethylbenzene	6822.61		17056.53		530.00	3100.00						
Fluoride												
Hardness												
Hexane extractable material (HEM)												
Iron					300.00						1000	
Magnesium												
Mercury-Trace						0.14	2.1	1.4	2.1	0.012	0.77	0.012
Molybdenum												
Nickel												
o-Xylene												
Phosphorus, Total												
Styrene												
Sulfate												
Total dissolved solids (TDS)												
Titanium												
Total BTEX												
Zinc	16548.46		41371.16		7400.00		35.36	120	110	32.29	120	100

Notes:

CWA - Clean Water Act
NTR - National Toxics Rule
CFR - Code of Federal Regulations
BTEX - benzene, toluene, ethylbenzene, xylenes
µg/L - micrograms per liter

ATTACHMENT C

[Click for Instructions](#)

Dilution Factor Calculations and Receiving Water Critical Conditions

Step 1: Enter Waterbody Type

Water Body Type	Freshwater
-----------------	------------

Facility Name	Groundwater Treatment System at the Closed Lehigh Cement Company CKD Pile Site in Metairie Falls, WA
Receiving Water	Sullivan Creek

Step 2: Enter Dilution Factors -OR- Calculate DFs by entering Facility/Receiving Water Flow Data

Do you want to enter dilution factors -or- flow data?	Flow Data
---	-----------

	Annual Average	Max Monthly Average	Daily Max
Facility Flow, MGD	0.0114	0.086	0.086
Facility Flow, cfs (calculated)	0.02	0.13	0.13

	Condition	Receiving Water Flow, cfs	Allowable % of river flow	Max Dilution Factor Allowed
<u>Aquatic Life - Acute</u>	7Q10	35.6	0.025	7.7
<u>Aquatic Life - Chronic</u>	7Q10	35.6	0.25	67.9
<u>HH-Non-Carcinogen</u>	30Q5	49.84	0.25	94.7
<u>HH-Carcinogen</u>	Harmonic Mean	106.8	0.25	1515.0
<u>Whole river at 7Q10</u>	7Q10	35.6	1	268.6

Step 3: Enter Critical Data

	Effluent	Receiving Water
Temp, °C	4.64	6.5
pH, s.u.	7.4	7
Alkalinity, mg/L as CaCO ₃	401	88
Hardness, mg/L CaCO ₃	91	89
Salinity, psu		
Receiving water TSS, mg/L (leave blank if unknown)		
If TSS is annual data, enter 'A'; if from critical period, enter 'S'; If no TSS, leave blank		

Step 4: Specify if using 'Mixed' values for hardness, temperature, and pH

	Use 'Mixed Hardness' (Y/N)	Use 'Mixed Max Temp' (Y/N)	Use 'Mixed pH' (Y/N)
	N	N	N
Acute Zone Boundary	89.3	6.3	7.1
Chronic Zone Boundary	89.0	6.5	7.0
Whole river at 7Q10	89.0	6.5	7.0

Step 5: Go to Reasonable Potential Tab and enter pollutant data

[Click for Next Step](#)

Reasonable Potential Calculation

Facility	Groundwater Treatment System at the Closed Lehigh Cement Company CKD Pile Site in Metalline Falls, WA
Water Body Type	Freshwater
Rec. Water Hardness	89 mg/L

Dilution Factors:	Acute	Chronic
Aquatic Life	7.7	67.9
Human Health Carcinogenic		1515.0
Human Health Non-Carcinogenic		94.7

Pollutant, CAS No. & NPDES Application Ref. No.		ALUMINUM, total recoverable, pH 6.5-9.0 7429905	BIS(2-ETHYLHEXYL) PHTHALATE 117817 13B	COPPER - 744058 6M Hardness dependent	IRON 7439896	LEAD - 7439921 7M Dependent on hardness	MERCURY 7439976 8M	ZINC- 7440666 13M hardness dependent
Effluent Data	# of Samples (n)	1	1	1	1	4	1	1
	Coeff of Variation (Cv)	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)	43	0.86	7.36	3180	4.4	0.0584	8.67
	Calculated 50th percentile Effluent Conc. (when n>10)							
Receiving Water Data	90th Percentile Conc., ug/L	0		0	0	0	0.00524	0.219
	Geo Mean, ug/L		0	0	0		0.00524	
Water Quality Criteria	Aquatic Life Criteria, Acute ug/L	750	-	15.2468	-	56.8729	2.1	103.687
	Chronic	87	-	10.275	1000	2.21625	0.012	94.6819
	WQ Criteria for Protection of Human Health, ug/L	-	1.8	1300	300	-	0.14	-
	Metal Criteria Acute	-	-	0.996	-	0.466	0.85	0.996
	Translator, decimal Chronic	-	-	0.996	-	0.466	-	0.996
	Carcinogen?	N	Y	N	N	N	N	N

Aquatic Life Reasonable Potential

Effluent percentile value		0.950	0.950	0.950	0.950	0.950	0.950
s	$s^2 = \ln(CV^2 + 1)$	0.555	0.555	0.555	0.555	0.555	0.555
Pn	$Pn = (1 - \text{confidence level})^{1/n}$	0.050	0.050	0.050	0.473	0.050	0.050
Multiplier		6.20	6.20	6.20	2.59	6.20	6.20
Max concentration (ug/L) at edge of...	Acute	34.658	5.908	2563.044	0.689	0.045	7.150
	Chronic	3.925	0.669	290.279	0.078	0.010	1.004
Reasonable Potential? Limit Required?		NO	NO	NO	NO	NO	NO

Human Health Reasonable Potential

s	$s^2 = \ln(CV^2 + 1)$	0.55451	0.55451	0.554513	0.554513
Pn	$Pn = (1 - \text{confidence level})^{1/n}$	0.050	0.050	0.050	0.050
Multiplier		2.48953	2.48953	2.4895271	2.489527
Dilution Factor		1514.97	94.6546	94.654635	94.65464
Max Conc. at edge of Chronic Zone, ug/L		0.00141	1.9E-01	8.4E+01	0.006721
Reasonable Potential? Limit Required?		NO	NO	NO	NO

TSD Calculations - Water Quality Criteria Table

Source: [WAC 173-201A-240](#)

Source: [EPA National Recommended Water Quality Criteria](#)

Criteria below calculated using:

Acute Hardness, mg/L: 89.0
Chronic Hardness, mg/L: 89.0

Pollutant, CAS No. & NPDES Application Ref. No.	Priority Pollutant?	Carcinogen?	Aquatic Life Criteria, µg/L		Human Health Criteria, µg/L	Organoleptic Effects	Metals Translators		Source and Comments	Priority Pollutant Number
			Fresh		Fresh		Freshwater			
			Acute	Chronic			Acute	Chronic		
ALUMINUM, total recoverable, pH 6.5-9.0 7429905	N	N	750	87	Fresh				EPA National Recommended WQ Criteria:1988 (53 FR 33178)	
BIS(2-ETHYLHEXYL) PHTHALATE 117817 13B	Y	Y			1.8				National Toxics Rule (40 CFR 131.36)	66
COPPER - 744058 6M Hardness dependent	Y	N	15.25	10.28	1300	1000	0.996	0.996	WAC 173-201A (Aug. 2016)	120
IRON 7439896	N	N		1000	300.00				EPA National Recommended WQ Criteria:1986 EPA 440/5-86-001	
LEAD - 7439921 7M Dependent on hardness	Y	N	56.87	2.22			0.47	0.47	WAC 173-201A (Aug. 2016)	122
MERCURY 7439976 8M	Y	N	2.10	0.012	0.14		0.85		WAC 173-201A (Aug. 2016), National Toxics Rule (40 CFR 131.36)	123
ZINC- 7440666 13M hardness dependent	Y	N	103.69	94.68		5000.00	0.996	0.996	WAC 173-201A (Aug. 2016)	128

Notes: Black text - WAC 173-201A (Aug. 2016)

Blue text - EPA National Recommended WQ Criteria:(<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>)

Red text - National Toxics Rule (40 CFR 131.36)