Appendix B

Reverse Osmosis (RO) Concentrate Sampling Plan Results



City of Pismo Beach and Water Systems Consulting, Inc.
Regional Groundwater Sustainability Program

Appendix B of Technical Memorandum 3
RO CONCENTRATE SAMPLING PLAN RESULTS

DRAFT | November 2018

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Abbreviations

ABC	Aquatic Bioassay Consulting
AOP	advanced oxidation process
BOD	biochemical oxygen demand
CCBDF	Central Coast Blue Demonstration Facility
CCR	California Code of Regulations
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DLC	dioxin-like compound
DPA	Diphenylamine
EC25	twenty five percent effective concentration
EC50	fifty percent effective concentration
HCH	Hexachlorocyclohexane
IC25	twenty five percent inhibition concentration
IC50	fifty percent inhibition concentration
K-40	potassium forty
MCL	maximum contamination limit
MDL	method detection limit
MF	microfiltration
µg/L	micrograms per liter
mg/L	milligrams per liter
mrem/year	millirems per year
MRP	monitoring and reporting program
ND	non-detect
NDMA	N-Nitrosodimethylamine
NDPA	2-Nitrodiphenylamine
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	Perchloroethylene
pCi/L	picocuries per liter
pg/L	picogams per liter
ppm	parts per million
RL	reporting limit
RO	reverse osmosis
SSLOCSD	South San Luis Obispo Sanitation District
TCDD	2,3,7,8-Tetrachlorodibenzodioxin
TCE	Trichloroethylene

TEF	toxicity equivalency factor
TEQ	TCDD toxic equivalence
TM	Technical Memorandum
TSS	total suspended solids
TUa	acute toxicity units
TUc	chronic toxicity units
UF	ultrafiltration
UV	ultraviolet radiation
WHO	World Health Organization
WDR	waste discharge requirements
WSC	Water Systems Consulting, Inc.
WWTP	wastewater treatment plant

Appendix B of Technical Memorandum 3

RO CONCENTRATE SAMPLING PLAN RESULTS

1.1 Introduction

In preparation for a full-scale potable water reuse project at the City of Pismo Beach (City), Water Systems Consulting (WSC), Carollo Engineers, Inc., and IDE Technologies have teamed to install and operate the Central Coast Blue Demonstration Facility (CCBDF). The CCBDF is located at the City of Pismo Beach Wastewater Treatment Plant (WWTP). The CCBDF utilizes microfiltration (MF), reverse osmosis (RO), and an ultraviolet light (UV) advanced oxidation process (UV AOP) to purify WWTP secondary effluent into new high quality water. The RO system within the CCBDF produces a 75 percent to 85 percent yield, resulting in rejection of 15 percent to 25 percent as RO concentrate (also referred to as brine). This concentrate closely represents the concentrate expected from a full-scale RO process treating effluent from the City's WWTP.

A desk-top RO concentrate characterization study was completed to calculate theoretical concentrations of regulated pollutants in the concentrate from the planned potable water reuse facility and compare those with effluent concentration limits in the City's Waste Discharge Requirements (WDRs) to determine whether the RO concentrate would cause any potential exceedances. Theoretical concentrations were calculated using historical data from the City's annual reports and a concentration factor based on assumed removal efficiencies through the RO process. The results of the desk-top RO concentrate characterization study are presented in Technical Memorandum (TM) 3. The initial analysis resulted in a list of pollutants whose theoretical concentrations appeared to exceed the City's effluent concentration limits.

A sampling plan was prepared for the City to test both RO feed water and RO concentrate from the CCBDF to verify initial findings from the desk-top RO concentrate characterization. The sampling plan (Appendix A of TM 3) contained recommended sampling locations, a list of parameters to be analyzed, and a sampling schedule. The City completed the sampling program, and results are presented in this appendix.

1.2 Permit Compliance

Final effluent limitations are separated into four categories in the City's waste discharge requirements (WDRs) (NPDES No. CA0048151, Draft Order No. R3-2015-0016):

1. **Technology-Based and Bacteriological Pollutants.** The City must comply with average monthly, average weekly, and maximum daily effluent concentration limits. The permit also lists instantaneous maximum and minimum limits for pH.
2. **Protection of Marine Aquatic Life.** The City must comply with 6-month median, daily maximum, and instantaneous maximum limits, which are both concentration and mass loading limits.
3. **Protection of Human Health (Non-Carcinogens).** The City must comply with 30-day average limits, which are both concentration and mass loading limits.

4. **Protection of Human Health (Carcinogens).** The City must comply with 30-day average limits, which are both concentration and mass loading limits.

For the purposes of the desk-top RO concentrate analysis, average monthly, 6-month median, and 30-day average limits were used. Compliance with effluent limitations are determined using sample reporting protocols defined in the City's Monitoring and Reporting Program (MRP), which specifies minimum sampling frequencies, sample type (24-hour composite, metered, calculated, grab, etc.), approved tests, and reporting requirements.

1.3 Recommended Parameters to Sample

After calculating the theoretical concentrate concentrations using historical data, the following pollutants and parameters were identified as having the potential to exceed effluent limitations:

- Biochemical Oxygen Demand (BOD)
- Total Suspended Solids (TSS)
- Arsenic
- Copper
- Nickel
- Total Chlorine Residual
- Gross Beta
- Benzidine
- Bis(2-chloroethyl) ether
- Chlordane
- 3,3-Dichlorobenzidine
- Dichlorobromomethane
- Hexachlorobenzene
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Biphenyls (PCBs)
- 2,3,7,8-Tetrachlorodibenzo-p-dioxin Equivalents (TCDD Equivalents)
- Toxaphene

In addition to the parameters and chemical pollutants listed above, the sampling program examined aquatic toxicity through a series of aquatic bioassays.

1.4 Sampling Events and Laboratory Analysis

The City sampled RO feed water and RO concentrate in six separate sampling events. The dates that the City collected samples at CCBDF are:

- Thursday, July 19, 2018
- Friday, July 27, 2018
- Wednesday, August 1, 2018
- Tuesday, August 7, 2018
- Monday, August 13, 2018
- Tuesday, August 28, 2018

Samples were analyzed at Abalone Coast Analytical, Inc., BSK Associates, and Aquatic Bioassay Consulting Laboratories, Inc. Lab reports showing the analytical result, method detection limit

(MDL) and reporting limit (RL), and the analytical method used for each analysis are included in Sub-Appendix B1 at the end of this report.

A summary of the analytical lab results are discussed in the next section. Toxicity, Radioactivity, and TCDD Equivalents are discussed in separate sections.

1.5 Summary of Analytical Lab Results

1.5.1 RO Feed Water

Table 1 summarizes the average and maximum results from the RO feed water sampling. RO feed water is MF filtrate, and is not (and will not be) a regulated water quality. Secondary effluent discharge and RO concentrate will govern NPDES compliance. The testing in Table 1, below, is used in comparison to the RO concentrate results provided later in this text.

For parameters whose analyses returned non-detect (ND) readings, one half of the MDL was used to calculate average and maximum values. The effluent limit for each parameter is listed, and exceedances of NPDES requirements are indicated with an asterisk. Average and maximum results that incorporate ND results are indicated with a "<" symbol.

Table 1 Average and Maximum RO Feed Water Results

Analyte	Units	Average	Maximum	Effluent Limit
5-Day BOD	mg/L	<1.47	2.76	30
Suspended Solids (TSS)	mg/L	<0.76	1.8	30
Total Residual Chlorine	ppm (mg/L)	5.82*	25*	0.33
Arsenic	µg/L	2.05	2.3	830
Copper	µg/L	4.53	6.9	168
Nickel	µg/L	4.9	5.4	830
DDT(1)	µg/L	<0.004	<0.02	0.028
Aldrin	µg/L	<0.002	<0.008*	0.0036
HCH(2)	µg/L	<0.013	<0.062	0.66
PCBs(3)	µg/L	<0.624*	<3.0*	0.0031
Chlordane	µg/L	<0.054*	<0.26*	0.0038
Dieldrin	µg/L	<0.002	<0.01*	0.0066
Endosulfan(4)	µg/L	<0.007	<0.035	1.49
Endrin	µg/L	<0.002	<0.008	0.33
Heptachlor	µg/L	<0.001	<0.007	0.0083
Heptachlor Epoxide	µg/L	<0.001	<0.007*	0.0033
Toxaphene	µg/L	<0.073*	<0.35*	0.0349
1,1,1-Trichloroethane	µg/L	<0.07	<0.07	89,000,000
1,1,2,2-Tetrachloroethane	µg/L	<0.06	<0.06	380
1,1,2-Trichloroethane	µg/L	<0.07	<0.07	1,560
1,1-Dichloroethene	µg/L	<0.06	<0.06	149
Dichlorobenzenes (5)	µg/L	<0.115	<0.115	810,000

Table 1 Average and Maximum RO Feed Water Results (continued)

Analyte	Units	Average	Maximum	Effluent Limit
1,2-Dichloroethane	µg/L	<0.05	<0.05	4,600
1,4-Dichlorobenzene	µg/L	<0.06	<0.06	2,988
Benzene	µg/L	<0.075	<0.075	970
Bromodichloromethane	µg/L	0.462	0.66	1,000
Halomethanes[6]	µg/L	<1.01	<1.65	21,000
Carbon Tetrachloride	µg/L	<0.05	<0.05	149
Chlorobenzene	µg/L	<0.065	<0.065	94,000
Chloroform	µg/L	1.73	2.9	21,580
1,3-Dichloropropene	µg/L	<0.115	<0.115	1,477
Dibromochloromethane	µg/L	<0.073	0.14	1,400
Dichloromethane	µg/L	<0.055	<0.055	74,000
Ethylbenzene	µg/L	<0.065	<0.065	680,000
Hexachloroethane	µg/L	<0.075	<0.075	410
Tetrachloroethene (PCE)	µg/L	<0.055	<0.055	330
Toluene	µg/L	<0.423	0.68	14,000,000
Trichloroethene (TCE)	µg/L	<0.065	<0.065	4,482
Vinyl Chloride	µg/L	<0.075	<0.075	5,900
1,2-Diphenylhydrazine (as Azobenzene)	µg/L	<0.05	<0.05	26.0
2,4-Dinitrotoluene	µg/L	<0.05	<0.05	430
3,3-Dichlorobenzidine	µg/L	<0.27	<0.27	1.30
Benzidine	µg/L	<0.7*	<0.7*	0.011
Bis(2-chloroethoxy)methane	µg/L	<0.05	<0.05	730
Bis(2-chloroethyl) ether	µg/L	<0.075	<0.075	7.40
Bis(2-chloroisopropyl) ether	µg/L	<0.065	<0.065	199,200
Bis(2-ethylhexyl) phthalate	µg/L	<0.145	<0.145	580
Diethyl phthalate	µg/L	<0.05	<0.05	5,400,000
Dimethyl phthalate	µg/L	<0.05	<0.05	136,120,000
Di-n-butyl phthalate	µg/L	<0.07	<0.07	580,000
Fluoranthene	µg/L	<0.001	<0.001	2,490
Hexachlorobenzene	µg/L	<0.075*	<0.075*	0.0349
Hexachlorobutadiene	µg/L	<0.065	<0.065	2,300
Hexachlorocyclopentadiene	µg/L	<0.07	<0.07	9,600
Isophorone	µg/L	<0.055	<0.055	120,000
Nitrobenzene	µg/L	<0.055	<0.055	810
N-Nitrosodimethylamine (NDMA)	µg/L	<0.24	<0.24	1,200

Table 1 Average and Maximum RO Feed Water Results (continued)

Analyte	Units	Average	Maximum	Effluent Limit
N-Nitrosodi-n-propylamine (NDPA)	µg/L	<0.05	<0.05	63
N-Nitrosodiphenylamine (as DPA)	µg/L	<0.12	<0.12	410
PAHs(7)	µg/L	<0.017	<0.017	1.46
2,4,6-Trichlorophenol	µg/L	<0.07	<0.07	48
Chlorinated Phenolics(8)	µg/L	<0.44	<0.44	166
2,4-Dinitrophenol	µg/L	<0.135	<0.135	660
4,6-Dinitro-2-methylphenol	µg/L	<0.055	<0.055	36,000
Phenolic Compounds (non-chlorinated)(9)	µg/L	<0.6	<0.6	4,980

* Value exceeded the effluent limit

Notes:

(1) DDT Is the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.
(2) HCH is the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.
(3) PCBs (polychlorinated biphenyls) is the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.
(4) Endosulfan is the sum of endosulfan-alpha and -beta and endosulfan sulfate.
(5) Dichlorobenzes is the sum of 1,2- and 1,3-dichlorobenzene.
(6) Halomethanes is the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).
(7) PAHs (polynuclear aromatic hydrocarbons) is the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.
(8) Chlorinated Phenols include the following: 2-Chlorophenol, 2,4-Dichlorophenol, Pentachlorophenol, 2,4,6-Trichlorophenol, 4-Chloro-3-Methylphenol, 3-Chlorophenol, 4-Chlorophenol, 2,3-Dichlorophenol, 2,5-Dichlorophenol, 2,6-Dichlorophenol, 3,4-Dichlorophenol, 3,5-Dichlorophenol, 2,3,4,5-Tetrachlorophenol, 2,3,4,6-Tetrachlorophenol, 2,3,5,6-Tetrachlorophenol, 2,3,4-Trichlorophenol, 2,3,5-Trichlorophenol, 2,3,6-Trichlorophenol, 2,4,5-Trichlorophenol, and 3,4,5-Trichlorophenol
(9) Non-Chlorinated Phenols include the following: 2,4-Dimethylphenol, Phenol, Catechol (2-Hydroxyphenol), 2,6-Dimethylphenol, 3,4-Dimethylphenol, Hydroquinone (4-Hydroxyphenol) , 2-Methylphenol (ortho-Cresol) , 3-Methylphenol (meta-Cresol) , 4-Methylphenol (para-Cresol) , and Resorcinol (3-Hydroxyphenol)

Nine pollutants had average or maximum concentrations in the RO feed water that exceeded the effluent NPDES limits. Table 2 lists these pollutants of concern and describes the reasons for the exceedances. In eight of the nine cases, the results for these pollutants that exceeded effluent limits were calculated based on MDLs with levels ABOVE the allowable limit. The results are driven by an analytical method limitation and do not necessarily represent a water quality problem. Labs and methods with lower MDLs and RLs can be considered for future use.

The only exceedance based on an actual detected result was for Total Residual Chlorine, which has an effluent limit of 0.33 mg/L. The Total Residual Chlorine results are as follows:

- 7/19/18: 3.3 ppm (~mg/L) Total Residual Chlorine
- 7/27/18: 1.66 ppm (~mg/L) Total Residual Chlorine
- 8/1/18: 1.12 ppm (~mg/L) Total Residual Chlorine
- 8/7/18: 2.38 ppm (~mg/L) Total Residual Chlorine
- 8/13/18: 25 mg/L Total Residual Chlorine
- 8/28/18: 1.44 ppm (~mg/L) Total Residual Chlorine

An exceedance of Total Residual Chlorine is not a concern, as quenching can always be done to mitigate the residual.

Table 2 Exceedances in the RO Feed Water

Analyte	Which Result Exceeded the Limit	Cause for Exceedance
Total Residual Chlorine	Both	Results of all six sampling events exceeded the effluent limit of 0.33 mg/L.
Aldrin	Maximum	ND for all six sampling events. The MDL for analysis of the sample collected on 8/28 was 0.016 µg/L. The calculated result of 0.008 µg/L is greater than the effluent limit of 0.0036 µg/L.
PCBs	Both	ND for all constituent pollutants for all six sampling events. The MDLs for all pollutants ranging from 0.015 to 0.063 µg/L as well as the calculated results ranging from 0.0075 to 0.0315 µg/L are greater than the effluent limit of 0.0031 µg/L.
Chlordane	Both	ND for all six sampling events. The MDL for analysis of samples collected on 7/19, 7/27, 8/1, 8/7, and 8/13 was 0.026 µg/L, and the MDL for analysis of the sample collected on 8/28 was 0.52 µg/L. The calculated results of 0.013 and 0.26 µg/L are greater than the effluent limit of 0.0038 µg/L.
Dieldrin	Maximum	ND for all six sampling events. The MDL for analysis of the sample collected on 8/28 was 0.019 µg/L. The calculated result of 0.0095 µg/L is greater than the effluent limit of 0.0066 µg/L.
Heptachlor Epoxide	Maximum	ND for all six sampling events. The MDL for analysis of the sample collected on 8/28 was 0.014 µg/L. The calculated result of 0.007 µg/L is greater than the effluent limit of 0.0033 µg/L.
Toxaphene	Both	ND for all six sampling events. The MDL for analysis of the sample collected on 8/28 was 0.7 µg/L. The calculated result of 0.35 µg/L is greater than the effluent limit of 0.0349 µg/L. This one result caused the average result to exceed the effluent limit.
Benzidine	Both	ND for all six sampling events. The MDL for analysis of all samples was 1.4 µg/L. The calculated results of 0.7 µg/L is greater than the effluent limit of 0.011 µg/L.
Hexachlorobenzene	Both	ND for all six sampling events. The MDL for analysis of all samples was 0.15 µg/L. The calculated result of 0.075 µg/L is greater than the effluent limit of 0.0349 µg/L.

The data above is provided for relative comparison to the RO concentrate data below.

1.5.2 RO Concentrate

Table 3 summarizes the average and maximum results from the RO concentrate sampling. For parameters whose analyses returned ND readings, one half of the MDL was used to calculate

average and maximum values. The effluent limit for each parameter is listed, and exceedances are indicated with an asterisk. Average and maximum results that incorporate ND results are indicated with a "<" symbol.

Table 3 Average and Maximum RO Concentrate Results

Analyte	Units	Average	Maximum	Effluent Limit
5-Day BOD	mg/L	<1.96	4.0	30
Suspended Solids (TSS)	mg/L	<9.15	38*	30
Total Residual Chlorine	ppm (mg/L)	11.5*	61*	0.33
Arsenic	µg/L	9.05	10	830
Copper	µg/L	15.8	24	168
Nickel	µg/L	19.7	23	830
DDT(1)	µg/L	<0.007	<0.02	0.028
Aldrin	µg/L	<0.003	<0.008*	0.0036
HCH(2)	µg/L	<0.028	<0.062	0.66
PCBs(3)	µg/L	<1.1*	<3.0*	0.0031
Chlordane	µg/L	<0.095*	<0.26*	0.0038
Dieldrin	µg/L	<0.003	<0.01*	0.0066
Endosulfan(4)	µg/L	<0.013	<0.035	1.49
Endrin	µg/L	<0.003	<0.008	0.33
Heptachlor	µg/L	<0.003	<0.007	0.0083
Heptachlor Epoxide	µg/L	<0.003	<0.007*	0.0033
Toxaphene	µg/L	<0.128*	<0.35*	0.0349
1,1,1-Trichloroethane	µg/L	<0.07	<0.07	89,000,000
1,1,2,2-Tetrachloroethane	µg/L	<0.06	<0.06	380
1,1,2-Trichloroethane	µg/L	<0.07	<0.07	1,560
1,1-Dichloroethene	µg/L	<0.06	<0.06	149
Dichlorobenzenes(5)	µg/L	<0.115	<0.115	810,000
1,2-Dichloroethane	µg/L	<0.05	<0.05	4,600
1,4-Dichlorobenzene	µg/L	<0.06	<0.06	2,988
Benzene	µg/L	<0.075	<0.075	970
Bromodichloromethane	µg/L	1.57	2.3	1,000
Halomethanes(6)	µg/L	<0.89	<1.35	21,000
Carbon Tetrachloride	µg/L	<0.05	<0.05	149
Chlorobenzene	µg/L	<0.065	<0.065	94,000
Chloroform	µg/L	5.33	7.1	21,580
1,3-Dichloropropene	µg/L	<0.115	<0.115	1,477
Dibromochloromethane	µg/L	0.275	0.41	1,400
Dichloromethane	µg/L	<0.055	<0.055	74,000

Table 3 Average and Maximum RO Concentrate Results (continued)

Analyte	Units	Average	Maximum	Effluent Limit
Ethylbenzene	µg/L	0.197	0.22	680,000
Hexachloroethane	µg/L	<0.075	<0.075	410
Tetrachloroethene (PCE)	µg/L	<0.055	<0.055	330
Toluene	µg/L	0.52	0.81	14,000,000
Trichloroethene (TCE)	µg/L	<0.065	<0.065	4,482
Vinyl Chloride	µg/L	<0.075	<0.075	5,900
1,2-Diphenylhydrazine (as Azobenzene)	µg/L	<0.183	<0.25	26.0
2,4-Dinitrotoluene	µg/L	<0.183	<0.25	430
3,3-Dichlorobenzidine	µg/L	<1.86*	<5.5*	1.3
Benzidine	µg/L	<2.57*	<3.5*	0.011
Bis(2-chloroethoxy)methane	µg/L	<0.183	<0.25	730
Bis(2-chloroethyl) ether	µg/L	<0.272	<0.37	7.4
Bis(2-chloroisopropyl) ether	µg/L	<0.232	<0.315	199,200
Bis(2-ethylhexyl) phthalate	µg/L	<0.548	<0.75	580
Diethyl phthalate	µg/L	<0.183	<0.25	5,400,000
Dimethyl phthalate	µg/L	<0.183	<0.25	136,120,000
Di-n-butyl phthalate	µg/L	<0.25	<0.34	580,000
Fluoranthene	µg/L	<0.002	<0.003	2,490
Hexachlorobenzene	µg/L	<0.278*	<0.38*	0.0349
Hexachlorobutadiene	µg/L	<0.245	<0.335	2,300
Hexachlorocyclopentadiene	µg/L	<0.25	<0.34	9,600
Isophorone	µg/L	<0.208	<0.285	120,000
Nitrobenzene	µg/L	<0.195	<0.265	810
N-Nitrosodimethylamine (NDMA)	µg/L	<0.88	<1.2	1,200
N-Nitrosodi-n-propylamine (NDPA)	µg/L	<0.187	<0.255	63
N-Nitrosodiphenylamine (as DPA)	µg/L	<0.44	<0.6	410
PAHs[7]	µg/L	<0.089	<0.185	1.46
2,4,6-Trichlorophenol	µg/L	<0.257	<0.35	48
Chlorinated Phenolics[8]	µg/L	<1.64	<2.23	166
2,4-Dinitrophenol	µg/L	<0.512	<0.7	660
4,6-Dinitro-2-methylphenol	µg/L	<0.195	<0.265	36,000
Phenolic Compounds (non-chlorinated)[9]	µg/L	<2.31	<3.05	4,980

* Value exceeded the effluent limit

Notes:

(1) DDT Is the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.
(2) HCH is the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.
(3) PCBs (polychlorinated biphenyls) is the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.
(4) Endosulfan is the sum of endosulfan-alpha and -beta and endosulfan sulfate.
(5) Dichlorobenzes is the sum of 1,2- and 1,3-dichlorobenzene.
(6) Halomethanes is the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).
(7) PAHs (polynuclear aromatic hydrocarbons) is the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.
(8) Chlorinated Phenols include the following: 2-Chlorophenol, 2,4-Dichlorophenol, Pentachlorophenol, 2,4,6-Trichlorophenol, 4-Chloro-3-Methylphenol, 3-Chlorophenol, 4-Chlorophenol, 2,3-Dichlorophenol, 2,5-Dichlorophenol, 2,6-Dichlorophenol, 3,4-Dichlorophenol, 3,5-Dichlorophenol, 2,3,4,5-Tetrachlorophenol, 2,3,4,6-Tetrachlorophenol, 2,3,5,6-Tetrachlorophenol, 2,3,4-Trichlorophenol, 2,3,5-Trichlorophenol, 2,3,6-Trichlorophenol, 2,4,5-Trichlorophenol, and 3,4,5-Trichlorophenol
(9) Non-Chlorinated Phenols include the following: 2,4-Dimethylphenol, Phenol, Catechol (2-Hydroxyphenol), 2,6-Dimethylphenol, 3,4-Dimethylphenol, Hydroquinone (4-Hydroxyphenol) , 2-Methylphenol (ortho-Cresol) , 3-Methylphenol (meta-Cresol) , 4-Methylphenol (para-Cresol) , and Resorcinol (3-Hydroxyphenol)

Eleven pollutants had average or maximum concentrations in the RO concentrate that exceeded the effluent NPDES limits. Table 4 lists these pollutants of concern and describes the reason for the exceedance. In nine of the eleven cases, the exceedances are based on NDs based on the respective MDLs. The results for these pollutants that exceeded effluent limits were calculated based on MDLs with levels ABOVE the allowable limit. The results are driven by an analytical method limitation and do not necessarily represent a water quality problem. Labs and methods with lower MDLs and RLs can be considered for future use.

The only two exceedances based on an actual detected result were for TSS and Total Residual Chlorine, which have effluent limits of 30 mg/L and 0.33 mg/L respectively.

1.5.3 TSS

The TSS results are as follows:

- 7/19/18: 1.6 mg/L TSS, MDL = 1 mg/L
- 7/27/18: 1.2 mg/L TSS, MDL = 1 mg/L
- 8/1/18: 0.5 mg/L TSS, MDL = 1 mg/L
- 8/7/18: 1.6 mg/L TSS, MDL = 1 mg/L
- 8/13/18: 38 mg/L TSS, MDL = 5 mg/L (in this case, the RL was listed as 5 mg/L)
- 8/28/18: 12 mg/L TSS, MDL = 1 mg/L

Regarding the TSS sample, we believe that this sampling event with the measurable detection (38 mg/L) was in error, for the following reasons:

1. TSS samples are filtered using a glass microfiber, with a 1.5 µm pore size.
2. The MF system, with proven membrane integrity as part of the demonstration testing, is a Pall MF with a nominal pore size of 0.1 um, more than 10 times smaller than the pore size of the TSS glass microfiber.
3. Because of the pore size difference between the TSS test and the MF, the MF process is expected to reduce TSS to below the MDL in all cases.
4. RO concentrate is a 5 to 7X concentration of MF filtrate. Assuming a MDL of 1 mg/L in MF filtrate, the maximum TSS in RO concentrate would be in the range of 5 to 7 mg/L.

5. With measured TSS data in the MF filtrate of 0.5, 0.5, 1.8, 0.5, and 0.5 for five samples, the projected TSS in RO concentrate for these five data points remains <15 mg/L at all times, well below the single 38 mg/L sample result.

1.5.4 Total Residual Chlorine

The Total Residual Chlorine results are as follows:

- 7/19/18: 1.92 ppm (~mg/L) Total Residual Chlorine
- 7/27/18: 0.93 ppm (~mg/L) Total Residual Chlorine
- 8/1/18: 1.80 ppm (~mg/L) Total Residual Chlorine
- 8/7/18: 2.06 ppm (~mg/L) Total Residual Chlorine
- 8/13/18: 61 mg/L Total Residual Chlorine
- 8/28/18: 0.99 ppm (~mg/L) Total Residual Chlorine

An exceedance of Total Residual Chlorine is not a concern, as quenching can always be done to mitigate the residual.

Table 4 Exceedances in the RO Concentrate

Analyte	Which Result Exceeded the Limit	Cause for Exceedance
Suspended Solids (TSS)	Maximum	In samples taken on 7/19, 7/27, 8/7, TSS was detected but not quantified (DNQ), meaning that the result was between the MDL and the RL. ND for the sample collected on 8/1. The sample collected on 8/13 had a result of 38 mg/L, which exceeds the 30 mg/L limit.
Total Residual Chlorine	Both	Results of all six sampling events exceeded the effluent limit of 0.33 mg/L.
Aldrin	Maximum	ND for all six sampling events. The MDL for analyses of samples collected on 7/19 and 8/28 was 0.016 µg/L. The calculated result of 0.008 µg/L for those two samples is greater than the effluent limit of 0.0036 µg/L.
PCBs	Both	ND for all constituent pollutants for all six sampling events. MDLs for all pollutants ranging from 0.015 to 0.063 µg/L as well as calculated results ranging from 0.0075 to 0.0315 µg/L are greater than the effluent limit of 0.0031 µg/L.
Chlordane	Both	ND for all six sampling events. The MDL for analyses of samples collected on 7/27, 8/1, 8/7, and 8/13 was 0.026 µg/L, and the MDL for analyses of samples collected on 7/19 and 8/28 was 0.52 µg/L. The calculated results of 0.013 and 0.26 µg/L are greater than the effluent limit of 0.0038 µg/L.

Table 4 Exceedances in the RO Concentrate (continued)

Analyte	Which Result Exceeded the Limit	Cause for Exceedance
Dieldrin	Maximum	ND for all six sampling events. The MDL for analyses of samples collected on 7/19 and 8/28 was 0.019 µg/L. The calculated result of 0.0095 µg/L for those two samples is greater than the effluent limit of 0.0066 µg/L.
Heptachlor Epoxide	Maximum	ND for all six sampling events. The MDL for analyses of samples collected on 7/19 and 8/28 was 0.014 µg/L. The calculated result of 0.007 µg/L for those two samples is greater than the effluent limit of 0.0033 µg/L.
Toxaphene	Both	ND for all six sampling events. The MDL for analyses of samples collected on 7/19 and 8/28 was 0.7 µg/L. The calculated result of 0.35 µg/L for those two samples is greater than the effluent limit of 0.0349 µg/L.
3,3-Dichlorobenzidine	Both	ND for all six sampling events. The MDL for analyses of samples collected on 7/19, 8/1, 8/7, & 8/28 was 2.7 µg/L. The MDL for analysis of the sample collected on 8/13 sample was 11 µg/L. The calculated results of 1.35 µg/L for four samples and 5.5 µg/L for one samples are greater than the effluent limit of 1.30 µg/L.
Benzidine	Both	ND for all six sampling events. The MDL for analyses of samples collected on 7/19, 8/1, 8/7, & 8/27 was 7.0 µg/L. The calculated result of 3.5 µg/L for those four samples is greater than the effluent limit of 0.011 µg/L.
Hexachlorobenzene	Both	ND for all six sampling events. The MDL for analyses of samples collected on 7/19, 8/1, 8/7, & 8/27 was 0.76 µg/L. The MDL for analyses of samples collected on 7/27 & 8/13 sample was 0.15 µg/L. The calculated results of 0.38 for four samples and 0.075 µg/L for two samples are greater than the effluent limit of 0.0349 µg/L.

It is our position that nominal effluent limit exceedances that are based on ND results are to be considered non-violations.

Toxicity Testing

For both acute and chronic toxicity testing, a range of RO concentrate concentrations was recommended to match the range of possible concentrations expected at the end of the ocean outfall. Five concentrations levels were recommended for toxicity testing: 10 percent, 32.5 percent, 55 percent, 77.5 percent, and 100 percent, where 10 percent represents RO concentrate blended with the maximum possible flow of secondary effluent from South San Luis

Obispo County Sanitation District (SSLOCSD) and 100 percent represents only RO concentrate flow from the City.

Lab grade water or organism culture water was used for dilution. Aquatic Bioassay and Consulting (ABC) Laboratories in Ventura, CA performed the bioassays as a subcontractor to Abalone Coast Analytical in San Luis Obispo, CA.

The City collected samples for toxicity testing on the following dates:

- Wednesday, August 1, 2018
- Monday, August 13, 2018
- Tuesday, August 28, 2018

Both acute and chronic toxicity testing were performed, as detailed below.

1.5.5 Acute Toxicity

1.5.5.1 Species

The City's NPDES permit lists the following as approved species for acute toxicity testing:

- Shrimp, Holmesimysis costata
- Shrimp, Mysidopsis bahia
- Silversides, Menidia beryllina
- Sheepshead minnow, Cyprinodon variegatus

Silversides was recommended for the RO concentrate acute toxicity testing because silversides is the species that the City has used in the past for acute toxicity testing of their final effluent.

1.5.5.2 Results

Table 5 shows the results of the three acute toxicity tests for survival of silversides larvae during a 96-hour test duration in the various recommended RO concentrate concentrations. The target effluent limit for compliance is 5.3 acute toxicity units (TUa), which is equivalent to an EC50 of 18.87 percent. EC50 is the concentration of RO concentrate that would cause an observable adverse effect in 50 percent of the test organisms; explained further here:

- An EC50 of 18.87 percent means that no more than 50 percent of the larvae would die after 96 hours in an 18.87 percent solution of RO concentrate.
- If a solution more dilute than 18.87 percent RO concentrate causes death in at least 50 percent of the larvae after 96 hours, the acute toxicity value would be greater than 5.3 TUa and would be considered out of compliance.
- If a solution more concentrated than 18.87 percent RO concentrate causes death in no more than 50 percent of the larvae after 96 hours, the acute toxicity value would be less than 5.3 TUa and would be considered in compliance.

All three acute toxicity tests yielded results below the effluent limit of 5.3 TUa.

Table 5 Acute Toxicity Test Results – Silversides Larvae Survival

Sample Date	% Adverse Effect in 0.0% RO Concentrate	% Adverse Effect in 10.0% RO Concentrate	% Adverse Effect in 32.5% RO Concentrate	% Adverse Effect in 55.0% RO Concentrate	% Adverse Effect in 77.5% RO Concentrate	% Adverse Effect in 100% RO Concentrate	Survival	TUa(1)	EC25(2)	EC50(3)
8/1/18	0%	0%	5%	5%	17.5%	50%	50% Survival in 100% Sample	1.00	82.7%	100%
8/13/18	0%	-2.63%	5.26%	7.89%	63.2%	76.3%	22.5% Survival in 100% Sample	1.39	61.6%	71.9%
8/28/18	0%	2.63%	-2.63%	50%	81.6%	100%	0% Survival in 100% Sample	1.82	43.8%	55%

Notes:

(1) TUa is Acute Toxicity units. TUa = 100/EC50. Effluent limit for acute toxicity is 5.3 TUa.

(2) EC25 is the 25 percent Effect Concentration. This is the concentration that would cause an observable adverse effect in 25 percent of the test organisms.

(3) EC50 is the 50 percent Effect Concentration. This is the concentration that would cause an observable adverse effect in 50 percent of the test organisms. EC50 greater than 18.87 percent would be considered in compliance.

(4) Although EC25 is not required for compliance, both EC25 and EC50 are included as benchmarks for the test. A linear interpolation of the data points with percent concentration on the x-axis and survival rate on the y-axis allows for a predicted estimate of the survival at any concentration from 0 to 100 percent. Likewise, the interpolation allows for a predicted percent concentration at any survival rate. In this case, the values shown for EC25 and EC50 are the predicted percent concentrations at which 75 percent of the test organisms and 50 percent of the test organisms survive in each sample respectively.

1.5.6 Chronic Toxicity

1.5.6.1 Species

The City's NPDES permit requires three test species for chronic toxicity testing: a fish, an invertebrate, and an aquatic plant. The City's permit lists the following as approved species for chronic toxicity testing:

- Giant kelp, Macrocystis pyrifera
- Red abalone, Haliotis rufescens
- Oyster, Crassotsrea gigas; mussels, Mytilus spp.
- Urchin, Strongylocentrotus purpuratus; sand dollar, Dendraster excentricus
- Shrimp, Homesimysis costata
- Shrimp, Mysidopsis bahia
- Topsmelt, Atherionops affinis
- Silverside, Menidia beryllina

Topsmelt was recommended as the fish species, urchin was recommended as the invertebrate species, and giant kelp was recommended as the aquatic plant species. Topsmelt is a species that was used for recent RO concentrate testing in Ventura, urchin is a species that the City has used in the past for chronic toxicity testing of their final effluent, and giant kelp is the only approved aquatic plant listed in the permit.

For compliance with chronic toxicity requirements, all three species must be tested initially to determine the most sensitive species. Subsequent tests can be performed using only the most sensitive species. It was recommended that chronic toxicity testing be performed on all three species using RO concentrate collected on the first sampling event, and that the testing be performed on only the most sensitive species using RO concentrate collected on the subsequent sampling events. Topsmelt was determined to be the most sensitive species. However, because of a quality control issue with the topsmelt test using sample collected on 8/1, the lab was unable to perform a total of three chronic toxicity tests on topsmelt, and only two chronic toxicity results are available using topsmelt as the test organism.

1.5.6.2 Results

Table 6 shows the results of the three chronic toxicity tests which tested sea urchin fertilization during a 40-minute test duration, kelp germination and growth during a 48-hour test duration, and topsmelt survival and growth during a 7-day test duration in the various recommended RO concentrations. The target effluent limit for compliance is 170 chronic toxicity units (TUc), which is equivalent to a NOEC of 0.59 percent. NOEC is the highest tested concentration that would cause no observable adverse effect on the test organisms; explained further here:

- A NOEC of 0.59 percent means that 100 percent of the topsmelt would survive after 7 days in a 0.59 percent solution of RO concentration.
- If a solution more dilute than 0.59 percent RO concentrate causes death in any of the topsmelt after 7 days, the chronic toxicity value would be greater than 170 TUc and would be considered out of compliance.
- If 100 percent of the topsmelt survive in a solution more concentrated than 0.59 percent RO concentrate after 7 days, the chronic toxicity value would be less than 170 TUc and would be considered in compliance.

All chronic toxicity tests yielded results below the effluent limit of 170 TUc.

Table 6 Chronic Toxicity Test Results

Sample Date	Test	% Adverse Effect in 0.0% RO Concentrate	% Adverse Effect in 10.0% RO Concentrate	% Adverse Effect in 32.5% RO Concentrate	% Adverse Effect in 55.0% RO Concentrate	% Adverse Effect in 77.5% RO Concentrate	% Adverse Effect in 100% RO Concentrate	NOEC(1)	TUc(2)	EC25/ IC25(3)	EC50/ IC50(4)
8/1/18	Sea Urchin Fertilization	0%	-3.22%	-1.07%	-0.27%	0%	-2.14%	100%	1.00	>100%	>100%
8/1/18	Kelp Germination and Growth	Germination: 0% Tube Length: 0%	Germination: 1.48% Tube Length: -1.16%	Germination: 1.06% Tube Length: 1.3%	Germination: 2.75% Tube Length: -0.14%	Germination: 1.48% Tube Length: 0.43%	Germination: 1.9% Tube Length: 0%	Germination: 100% Tube Length: 100%	Germination: 1.00 Tube Length: 1.00	Germination: >100% Tube Length: >100%	Germination: >100% Tube Length: >100%
8/13/18	Topsmelt Survival and Growth	Survival: 0% Growth: 0%	Survival: -4.17% Growth: -718%	Survival: -4.17% Growth: -20.9%	Survival: 0% Growth: -7.89%	Survival: 25% Growth: 13.5%	Survival: 87.5% Growth: 87.8%	Survival: 77.5% Growth: 77.5%	Survival: 1.29 Growth: 1.29	Survival: 75.6% Growth: 78.9%	Survival: 86% Growth: 87.1%
8/13/18	Sea Urchin Fertilization	0%	-1.57%	0%	0%	-1.31%	-52%	100%	1.00	>100%	>100%
8/28/18	Topsmelt Survival and Growth	Survival: 0% Growth: 0%	Survival: 18.2% Growth: 22.5%	Survival: 4.55% Growth: -16.9%	Survival: 9.09% Growth: -7.26%	Survival: 50% Growth: 61.1%	Survival: 81.8% Growth: 84.1%	Survival: 55% Growth: 55%	Survival: 1.82 Growth: 1.82	Survival: 63.2% Growth: 64.2%	Survival: 77.5% Growth: 73.4%

Notes:

(1) NOEC is the No Observed Effect Concentration. This is the highest tested concentration that causes no observable adverse effect on the test organisms. NOEC greater than 0.59 percent would be considered in compliance.

(2) TUc is Chronic Toxicity units. TUc = 100/NOEC. Effluent limit for chronic toxicity is 170 TUc.

(3) EC25 is the 25 percent Effect Concentration. This is the concentration that would cause an observable adverse effect in 25 percent of the test organisms. IC25 is the 25 percent Inhibition Concentration. This is the concentration that would cause an observable adverse inhibition in 25 percent of the test organisms.

(4) EC50 is the 50 percent Effect Concentration. This is the concentration that would cause an observable adverse effect in 50 percent of the test organisms. IC50 is the 50 percent Inhibition Concentration. This is the concentration that would cause an observable adverse inhibition in 50 percent of the test organisms.

(5) Although EC25 and EC50 are not required for compliance, they are included as benchmarks for the test. A linear interpolation of the data points with percent concentration on the x-axis and survival rate on the y-axis allows for a predicted estimate of the survival at any concentration from 0 to 100 percent. Likewise, the interpolation allows for a predicted percent concentration at any survival rate. In this case, the values shown for EC25 and EC50 are the predicted percent concentrations at which 75 percent of the test organisms and 50 percent of the test organisms survive in each sample respectively.

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1.6 Radioactivity Testing

1.6.1 Compliance

The City's NPDES permit states that radioactivity in the City's effluent must not exceed limits specified in California Code of Regulations, Title 22, Section 64443 (22 CCR § 64443), which includes maximum contamination limits (MCLs) for radionuclides. Table 7 shows the regulated radionuclides along with the listed MCLs in 22 CCR § 64443.

Table 7 Regulated Radionuclides in 22 CCR § 64443

Radionuclide	MCL	Units
Beta/photon emitters	4	mrem/year annual dose equivalent
Strontium-90	8	pCi/L
Tritium	20,000	pCi/L

For new systems, initial monitoring should be conducted quarterly. Compliance is based on a running average of four consecutive quarters. If gross beta minus naturally occurring potassium-40 (K-40) exceeds a system's screening level (50 pCi/L for vulnerable systems or 15 pCi/L for contaminated systems), the same sample should be analyzed to identify the most likely emitters. A list of speciated beta and photon emitters was included in Appendix A of TM 3. The mrem/year equivalent of each species is calculated and summed to determine compliance with the 4 mrem/year MCL for beta/photon emitters. If one sample is more than 4 times the MCL or if the rolling annual average is greater than the MCL, it is considered a violation, and monitoring must be increased to monthly until the three month rolling average is less than the MCL. If the running annual average of gross beta minus K-40 is below the screening level, monitoring can be reduced to once every 3 years.

Strontium-90 and tritium should be monitored annually. If a sample result is greater than the MCL, a confirmation sample shall be averaged with the initial result, all monitoring results collected during the previous 12 months can be analyzed, and a running annual average of sampling results can be used to determine compliance. If one sample is more than 4 times the MCL or if the rolling annual average is greater than the MCL, it is considered a violation. If a sample result is greater than the MCL, a confirmation sample shall be averaged with the initial result

Gross beta and K-40 were sampled as part of the broader RO concentrate sampling effort. A screening level of 50 pCi/L was set for gross beta less K-40. The City sampled RO feed water and RO concentrate at CCBDF on the following dates:

- Thursday, July 19, 2018
- Friday, July 27, 2018
- Wednesday, August 1, 2018
- Tuesday, August 7, 2018
- Monday, August 13, 2018
- Tuesday, August 28, 2018

Samples were analyzed for gross beta and K-40 at BSK Associates. Lab reports showing the results of these analyses are included at the end of this appendix.

1.6.2 Results

Table 8 summarizes the gross beta and K-40 results from the RO feed water and RO concentrate sampling.

Table 8 Gross Beta and K-40 Results (pCi/L)

Sample Date	RO Feed Gross Beta	RO Feed K-40	RO Concentrate Gross Beta	RO Concentrate K-40
7/17/18	6.40	252	26.4	1,054
7/19/18	1.98	1,902	4.21	1,148
8/1/18	5.12	ND	9.75	243
8/7/18	23.0	ND	101*	614
8/13/18	19.2	ND	123*	40
8/28/18	5.03	0.0	14.3	590

Notes:
* Value exceeded the screening level

Results that surpassed the 50 pCi/L screening level are indicted with an asterisk. Subtracting the K-40 from the gross beta results reduces the result on 8/7 to less than the 50 pCi/L screening level, leaving only one actual exceedance. For the purposes of compliance, if exceedances occurred during the initial quarterly monitoring at the full-scale level, additional monitoring for the most likely radionuclides would be recommended and the 4 mrem/year equivalent dose MCL would be used as the target for the sum of the detected radionuclides. Only if the concentration of total beta/photon emitters was greater than 4 times the MCL or if the rolling annual average was greater than the MCL would the exceedances be considered a violation.

If the sampling results can be used as an indicator of compliance, the average of all six sampling events was below 50 pCi/L, and each exceedance did not exceed the screening level by at least four times.

1.7 TCDD Equivalents

The World Health Organization (WHO) assigned Toxicity Equivalence Factors (TEFs) to 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and dioxin-like compounds (DLCs) to evaluate the human health and ecological risks associated with exposure to these compounds. TCDD is typically specified as the index chemical for DLCs, and the toxicity of DLCs is expressed relative to the toxicity of TCDD. Table 9 shows the regulated isomer groups along with their respective TEFs.

TCDD toxic equivalence (TEQ) is the sum of the products of the concentrations of the individual compounds with their assigned TEFs. The City's NPDES effluent limit for TCDD Equivalents is 6.4 x 10^{-7} µg/L or 0.64 pg/L.

TEQ results for both the RO feed water and RO concentrate were ND for all six sampling events.

Table 9 TCDD Equivalents

Isomer Group	Toxicity Equivalence Factor (TEF)
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

1.8 Conclusion

1.8.1 Analytical Lab Results

The results of the sampling plan indicate that the concentrations of the large majority of constituents present in the RO concentrate will not cause exceedances of the City's effluent concentration limits. All but two of the apparent concentrations that caused exceedances were due to detection level challenges, with the MDL being greater than the permitted concentration, and thus it is not possible to demonstrate compliance for these parameters. The two parameters that caused exceedances based on an actual detected concentration were TSS and Total Residual Chlorine. For TSS, five of six samples were in compliance, and the single exceedance is assumed to be in error. For Total Residual Chlorine, all six samples exceeded the effluent limit in both the RO feed water and RO concentrate. However, an exceedance of Total Residual Chlorine can be resolved for the full-scale facility by quenching the chlorine.

1.8.2 Toxicity

Toxicity results indicate that RO concentrate will be in compliance for both chronic and acute toxicity requirements.

1.8.3 Radioactivity

Radioactivity testing indicates that the RO concentrate will be in compliance, though there was one exceedance during testing. However, initial quarterly monitoring will be required for the full-scale facility to establish future monitoring requirements and possible additional analysis of beta/photon emitters.

If future monitoring indicates exceedances of the 50 pCi/L screening level, planning for the discharge of RO concentrate downstream of the currently effluent compliance point may be recommended.

1.8.4 TCDD Equivalents

TCDD Equivalents testing indicates no exceedances of the effluent concentration limits.

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Appendix 1

LAB REPORTS

RO Feed Water Summary					Exceedance	
Analyte	Avg	Max	Units	Effluent Limit	Avg	Max
5-Day BOD	1.47	2.76	mg/L	30		
Suspended Solids	0.76	1.80	mg/L	30		
Total Residual Chlorine	5.82	25.00	ppm/mg/L	0.330	OVER	OVER
Arsenic	2.05	2.30	µg/L	830		
Copper	4.53	6.90	µg/L	168		
Nickel	4.90	5.40	µg/L	830		
DDT	0.004	0.020	µg/L	0.028		
Aldrin	0.002	0.008	µg/L	0.004		OVER
HCH	0.013	0.062	µg/L	0.660		
PCBs	0.624	3.000	µg/L	0.003	OVER	OVER
Chlordane	0.054	0.260	µg/L	0.004	OVER	OVER
Dieldrin	0.002	0.010	µg/L	0.007		OVER
Endosulfan	0.007	0.035	µg/L	1.490		
Endrin	0.002	0.008	µg/L	0.330		
Heptachlor	0.00145	0.007	µg/L	0.008		
Heptachlor Epoxide	0.00145	0.007	µg/L	0.003		OVER
Toxaphene	0.073	0.350	µg/L	0.035	OVER	OVER
1,1,1-Trichloroethane	0.070	0.070	µg/L	89,000,000		
1,1,2,2-Tetrachloroethane	0.060	0.060	µg/L	380		
1,1,2-Trichloroethane	0.070	0.070	µg/L	1,560		
1,1-Dichloroethene	0.060	0.060	µg/L	149		
Dichlorobenzenes	0.115	0.115	µg/L	810,000		
1,2-Dichloroethane	0.050	0.050	µg/L	4,600		
1,4-Dichlorobenzene	0.060	0.060	µg/L	2,988		
Benzene	0.075	0.075	µg/L	970		
Bromodichloromethane	0.462	0.660	µg/L	1,000		
Halomethanes	1.008	1.650	µg/L	21,000		
Carbon Tetrachloride	0.050	0.050	µg/L	149		
Chlorobenzene	0.065	0.065	µg/L	94,000		
Chloroform	1.728	2.900	µg/L	21,580		
1,3-Dichloropropene	0.115	0.115	µg/L	1,477		
Dibromochloromethane	0.073	0.140	µg/L	1,400		
Dichloromethane	0.055	0.055	µg/L	74,000		
Ethylbenzene	0.065	0.065	µg/L	680,000		
Hexachloroethane	0.075	0.075	µg/L	410		
Tetrachloroethene (PCE)	0.055	0.055	µg/L	330		
Toluene	0.423	0.680	µg/L	14,000,000		
Trichloroethene (TCE)	0.065	0.065	µg/L	4,482		
Vinyl Chloride	0.075	0.075	µg/L	5,900		
1,2-Diphenylhydrazine (as Azobenzene)	0.050	0.050	µg/L	26		
2,4-Dinitrotoluene	0.050	0.050	µg/L	430		
3,3-Dichlorobenzidine	0.270	0.270	µg/L	1.300		
Benzidine	0.700	0.700	µg/L	0.011	OVER	OVER
Bis(2-chloroethoxy)methane	0.050	0.050	µg/L	730		
Bis(2-chloroethyl) ether	0.075	0.075	µg/L	7.400		
Bis(2-chloroisopropyl) ether	0.065	0.065	µg/L	199,200		
Bis(2-ethylhexyl) phthalate	0.145	0.145	µg/L	580		
Diethyl phthalate	0.050	0.050	µg/L	5,400,000		
Dimethyl phthalate	0.050	0.050	µg/L	136,120,000		
Di-n-butyl phthalate	0.070	0.070	µg/L	580,000		
Fluoranthene	0.001	0.001	µg/L	2,490		
Hexachlorobenzene	0.075	0.075	µg/L	0.035	OVER	OVER
Hexachlorobutadiene	0.065	0.065	µg/L	2,300		
Hexachlorocyclopentadiene	0.070	0.070	µg/L	9,600		
Isophorone	0.055	0.055	µg/L	120,000		
Nitrobenzene	0.055	0.055	µg/L	810		
N-Nitrosodimethylamine (NDMA)	0.240	0.240	µg/L	1,200		
N-Nitrosodi-n-propylamine (NDPA)	0.050	0.050	µg/L	63		
N-Nitrosodiphenylamine (as DPA)	0.120	0.120	µg/L	410		
PAHs	0.017	0.017	µg/L	1.460		
2,4,6-Trichlorophenol	0.070	0.070	µg/L	48		
Chlorinated Phenolics	0.440	0.440	µg/L	166		
2,4-Dinitrophenol	0.135	0.135	µg/L	660		
4,6-Dinitro-2-methylphenol	0.055	0.055	µg/L	36,000		
Phenolic Compounds (non-chlorinated)	0.600	0.600	µg/L	4,980		

RO Concentrate Summary					Exceedance	
Analyte	Avg	Max	Units	Effluent Limit	Avg	Max
5-Day BOD	1.961	4.000	mg/L	30		
Suspended Solids	9.150	38.000	mg/L	30		OVER
Total Residual Chlorine	11.450	61.000	ppm/mg/L	0.330	OVER	OVER
Arsenic	9.050	10.000	µg/L	830		
Copper	15.833	24.000	µg/L	168		
Nickel	19.667	23.000	µg/L	830		
DDT	0.007	0.020	µg/L	0.028		
Aldrin	0.003	0.008	µg/L	0.004		OVER
HCH	0.028	0.062	µg/L	0.660		
PCBs	1.099	3.000	µg/L	0.003	OVER	OVER
Chlordane	0.095	0.260	µg/L	0.004	OVER	OVER
Dieldrin	0.00349	0.010	µg/L	0.007		OVER
Endosulfan	0.013	0.035	µg/L	1.490		
Endrin	0.003	0.008	µg/L	0.330		
Heptachlor	0.003	0.007	µg/L	0.008		
Heptachlor Epoxide	0.003	0.007	µg/L	0.003		OVER
Toxaphene	0.128	0.350	µg/L	0.035	OVER	OVER
1,1,1-Trichloroethane	0.070	0.070	µg/L	89,000,000		
1,1,2,2-Tetrachloroethane	0.060	0.060	µg/L	380		
1,1,2-Trichloroethane	0.070	0.070	µg/L	1,560		
1,1-Dichloroethene	0.060	0.060	µg/L	149		
Dichlorobenzenes	0.115	0.115	µg/L	810,000		
1,2-Dichloroethane	0.050	0.050	µg/L	4,600		
1,4-Dichlorobenzene	0.060	0.060	µg/L	2,988		
Benzene	0.075	0.075	µg/L	970		
Bromodichloromethane	1.567	2.300	µg/L	1,000		
Halomethanes	0.890	1.350	µg/L	21,000		
Carbon Tetrachloride	0.050	0.050	µg/L	149		
Chlorobenzene	0.065	0.065	µg/L	94,000		
Chloroform	5.333	7.100	µg/L	21,580		
1,3-Dichloropropene	0.115	0.115	µg/L	1,477		
Dibromochloromethane	0.275	0.410	µg/L	1,400		
Dichloromethane	0.055	0.055	µg/L	74,000		
Ethylbenzene	0.197	0.220	µg/L	680,000		
Hexachloroethane	0.075	0.075	µg/L	410		
Tetrachloroethene (PCE)	0.055	0.055	µg/L	330		
Toluene	0.520	0.810	µg/L	14,000,000		
Trichloroethene (TCE)	0.065	0.065	µg/L	4,482		
Vinyl Chloride	0.075	0.075	µg/L	5,900		
1,2-Diphenylhydrazine (as Azobenzene)	0.183	0.250	µg/L	26		
2,4-Dinitrotoluene	0.183	0.250	µg/L	430		
3,3-Dichlorobenzidine	1.862	5.500	µg/L	1.300	OVER	OVER
Benzidine	2.567	3.500	µg/L	0.011	OVER	OVER
Bis(2-chloroethoxy)methane	0.183	0.250	µg/L	730		
Bis(2-chloroethyl) ether	0.272	0.370	µg/L	7.400		
Bis(2-chloroisopropyl) ether	0.232	0.315	µg/L	199,200		
Bis(2-ethylhexyl) phthalate	0.548	0.750	µg/L	580		
Diethyl phthalate	0.183	0.250	µg/L	5,400,000		
Dimethyl phthalate	0.183	0.250	µg/L	136,120,000		
Di-n-butyl phthalate	0.250	0.340	µg/L	580,000		
Fluoranthene	0.002	0.003	µg/L	2,490		
Hexachlorobenzene	0.278	0.380	µg/L	0.035	OVER	OVER
Hexachlorobutadiene	0.245	0.335	µg/L	2,300		
Hexachlorocyclopentadiene	0.250	0.340	µg/L	9,600		
Isophorone	0.208	0.285	µg/L	120,000		
Nitrobenzene	0.195	0.265	µg/L	810		
N-Nitrosodimethylamine (NDMA)	0.880	1.200	µg/L	1,200		
N-Nitrosodi-n-propylamine (NDPA)	0.187	0.255	µg/L	63		
N-Nitrosodiphenylamine (as DPA)	0.440	0.600	µg/L	410		
PAHs	0.089	0.185	µg/L	1.460		
2,4,6-Trichlorophenol	0.257	0.350	µg/L	48		
Chlorinated Phenolics	1.643	2.230	µg/L	166		
2,4-Dinitrophenol	0.512	0.700	µg/L	660		
4,6-Dinitro-2-methylphenol	0.195	0.265	µg/L	36,000		
Phenolic Compounds (non-chlorinated)	2.307	3.045	µg/L	4,980		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
7/27/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
8/1/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
8/7/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
8/28/2018	5-Day BOD	SM 5210 B	2.76 DNQ	2.29	3.00	mg/L	2.7600		
	5-Day BOD							**1.4680**	**2.7600**
7/19/2018	Suspended Solids	SM 2540 D	ND	1.00	2.00	mg/L	0.5000		
7/27/2018	Suspended Solids	SM 2540 D	ND	1.00	2.00	mg/L	0.5000		
8/1/2018	Suspended Solids	SM 2540 D	1.8 DNQ	1.00	2.00	mg/L	1.8000		
8/7/2018	Suspended Solids	SM 2540 D	ND	1.00	2.00	mg/L	0.5000		
8/28/2018	Suspended Solids	SM 2540 D	ND	1.00	2.00	mg/L	0.5000		
	Suspended Solids							**0.7600**	**1.8000**
7/19/2018	Total Residual Chlorine	SM 4500 Cl-G	3.3	0.01	0.02	ppm	3.3000		
7/27/2018	Total Residual Chlorine	SM 4500 Cl-G	1.66	0.01	0.02	ppm	1.6600		
8/1/2018	Total Residual Chlorine	SM 4500 Cl-G	1.12	0.01	0.02	ppm	1.1200		
8/7/2018	Total Residual Chlorine	SM 4500 Cl-G	2.38	0.01	0.02	ppm	2.3800		
8/13/2018	Chlorine, Residual	SM 4500-Cl B	25		0.10	mg/L	25.0000		
8/28/2018	Total Residual Chlorine	SM 4500 Cl-G	1.44	0.01	0.02	ppm	1.4400		
	Total Residual Chlorine							**5.8167**	**25.0000**
7/19/2018	Arsenic	EPA 200.8 DRC	2.2		0.10	µg/L	2.2000		
7/27/2018	Arsenic	EPA 200.8 DRC	2.3		0.10	µg/L	2.3000		
8/1/2018	Arsenic	EPA 200.8 DRC	2.2		0.10	µg/L	2.2000		
8/7/2018	Arsenic	EPA 200.8 DRC	2.1		0.10	µg/L	2.1000		
8/13/2018	Arsenic	EPA 200.8 DRC	1.9		0.20	µg/L	1.9000		
8/28/2018	Arsenic	EPA 200.8 DRC	1.6		0.30	µg/L	1.6000		
	Arsenic							**2.0500**	**2.3000**
7/19/2018	Copper	EPA 200.8 DRC	4.4		1.10	µg/L	4.4000		
7/27/2018	Copper	EPA 200.8 DRC	4.9		1.10	µg/L	4.9000		
8/1/2018	Copper	EPA 200.8 DRC	4.3		1.10	µg/L	4.3000		
8/7/2018	Copper	EPA 200.8 DRC	3.4		1.10	µg/L	3.4000		
8/13/2018	Copper	EPA 200.8 DRC	3.3		1.10	µg/L	3.3000		
8/28/2018	Copper	EPA 200.8 DRC	6.9		1.10	µg/L	6.9000		
	Copper							**4.5333**	**6.9000**
7/19/2018	Nickel	EPA 200.8 DRC	5.3		1.00	µg/L	5.3000		
7/27/2018	Nickel	EPA 200.8 DRC	5.4		1.00	µg/L	5.4000		
8/1/2018	Nickel	EPA 200.8 DRC	5.3		1.00	µg/L	5.3000		
8/7/2018	Nickel	EPA 200.8 DRC	4.4		1.00	µg/L	4.4000		
8/13/2018	Nickel	EPA 200.8 DRC	3.9		1.00	µg/L	3.9000		
8/28/2018	Nickel	EPA 200.8 DRC	5.1		1.00	µg/L	5.1000		
	Nickel							**4.9000**	**5.4000**
7/19/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
7/27/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/1/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/7/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/13/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/28/2018	4,4'-DDD	EPA 608	ND	0.01400	0.10	µg/L	0.0070		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
7/27/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/1/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/7/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/13/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/28/2018	4,4'-DDE	EPA 608	ND	0.01200	0.10	µg/L	0.0060		
7/19/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
7/27/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/1/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/7/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/13/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/28/2018	4,4'-DDT	EPA 608	ND	0.0140	0.10	µg/L	0.0070		
	DDT							**0.0042**	**0.0200**
7/19/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
7/27/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/1/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/7/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/13/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/28/2018	Aldrin	EPA 608	ND	0.01600	0.100	µg/L	0.0080		
	Aldrin							**0.0017**	**0.0080**
7/19/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
7/27/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/1/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/7/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/13/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/28/2018	alpha-BHC	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
7/19/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
7/27/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/1/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/7/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/13/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/28/2018	beta-BHC	EPA 608	ND	0.01100	0.100	µg/L	0.0055		
7/19/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
7/27/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/1/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/7/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/13/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/28/2018	Lindane	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
7/19/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
7/27/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/1/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/7/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/13/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/28/2018	delta-BHC	EPA 608	ND	0.0120	0.100	µg/L	0.0060		
	HCH							**0.0128**	**0.0615**
7/19/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
7/27/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1016	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
7/27/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/1/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/7/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/13/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/28/2018	Aroclor-1221	EPA 608	ND	1.300	2.00	µg/L	0.6500		
7/19/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
7/27/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/13/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1232	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
7/27/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/13/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1242	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
7/27/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/1/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/7/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/13/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/28/2018	Aroclor-1248	EPA 608	ND	0.400	2.00	µg/L	0.2000		
7/19/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
7/27/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/13/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1254	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
7/27/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/1/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/7/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/13/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/28/2018	Aroclor-1260	EPA 608	ND	0.300	2.00	µg/L	0.1500		
	PCBs							**0.6242**	**3.0000**
7/19/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
7/27/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/1/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/7/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/13/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/28/2018	Chlordane	EPA 608	ND	0.5200	2.00	µg/L	0.2600		
	Chlordane							**0.0542**	**0.2600**
7/19/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
7/27/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
8/1/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
8/7/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
8/28/2018	Dieldrin	EPA 608	ND	0.01900	0.10	µg/L	0.0095		
	Dieldrin							**0.0020**	**0.0095**
7/19/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
7/27/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/1/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/7/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/13/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/28/2018	Endosulfan I	EPA 608	ND	0.01800	0.10	µg/L	0.0090		
7/19/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
7/27/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/1/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/7/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/13/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/28/2018	Endosulfan II	EPA 608	ND	0.0360	0.10	µg/L	0.0180		
7/19/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
7/27/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/1/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/7/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/13/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/28/2018	Endosulfan Sulfate	EPA 608	ND	0.01500	0.10	µg/L	0.0075		
	Endosulfan							**0.0072**	**0.0345**
7/19/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
7/27/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/1/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/7/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/13/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/28/2018	Endrin	EPA 608	ND	0.01600	0.10	µg/L	0.0080		
	Endrin							**0.0017**	**0.0080**
7/19/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
7/27/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/1/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/7/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/13/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/28/2018	Heptachlor	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
	Heptachlor							**0.0015**	**0.0070**
7/19/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
7/27/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/1/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/7/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/13/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/28/2018	Heptachlor Epoxide	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
	Heptachlor Epoxide							**0.0015**	**0.0070**
7/19/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
7/27/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/1/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/7/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/28/2018	Toxaphene	EPA 608	ND	0.7000	2.00	µg/L	0.3500		
	Toxaphene							**0.0729**	**0.3500**
7/19/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
7/27/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/1/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/7/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/13/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/28/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
	1,1,1-Trichloroethane							**0.0700**	**0.0700**
7/19/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,1,2,2-Tetrachloroethane							**0.0600**	**0.0600**
7/19/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
7/27/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/1/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/7/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/13/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/28/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
	1,1,2-Trichloroethane							**0.0700**	**0.0700**
7/19/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,1-Dichloroethene							**0.0600**	**0.0600**
7/19/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/19/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
	Dichlorobenzenes							**0.1150**	**0.1150**
7/19/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
7/27/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/1/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/7/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/13/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/28/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
	1,2-Dichloroethane							**0.0500**	**0.0500**
7/19/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
7/27/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/1/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/7/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/13/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/28/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,4-Dichlorobenzene							**0.0600**	**0.0600**
7/19/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
7/27/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/1/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/7/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/13/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/28/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
	Benzene							**0.0750**	**0.0750**
7/19/2018	Bromodichloromethane	EPA 624	0.65	0.10	0.50	µg/L	0.6500		
7/27/2018	Bromodichloromethane	EPA 624	0.48	0.10	0.50	µg/L	0.4800		
8/1/2018	Bromodichloromethane	EPA 624	0.4	0.10	0.50	µg/L	0.4000		
8/7/2018	Bromodichloromethane	EPA 624	0.66	0.10	0.50	µg/L	0.6600		
8/13/2018	Bromodichloromethane	EPA 624	0.2	0.10	0.50	µg/L	0.2000		
8/28/2018	Bromodichloromethane	EPA 624	0.38	0.10	0.50	µg/L	0.3800		
	Bromodichloromethane							**0.4617**	**0.6600**
7/19/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
7/27/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/1/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/7/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/13/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/28/2018	Bromoform	EPA 624	ND	0.14	0.50	µg/L	0.0700		
7/19/2018	Bromomethane	EPA 624	ND	0.19	50.00	µg/L	0.0950		
7/27/2018	Bromomethane	EPA 624	0.38	0.19	50.00	µg/L	0.3800		
8/1/2018	Bromomethane	EPA 624	ND	0.19	50.00	µg/L	0.0950		
8/7/2018	Bromomethane	EPA 624	0.23	0.19	50.00	µg/L	0.2300		
8/13/2018	Bromomethane	EPA 624	ND	0.19	50.00	µg/L	0.0950		
8/28/2018	Bromomethane	EPA 624	ND	0.19	1.00	µg/L	0.0950		
7/19/2018	Chloromethane	EPA 624	0.74	0.18	0.50	µg/L	0.7400		
7/27/2018	Chloromethane	EPA 624	1.2	0.18	0.50	µg/L	1.2000		
8/1/2018	Chloromethane	EPA 624	0.83	0.18	0.50	µg/L	0.8300		
8/7/2018	Chloromethane	EPA 624	0.75	0.18	0.50	µg/L	0.7500		
8/13/2018	Chloromethane	EPA 624	0.33	0.18	0.50	µg/L	0.3300		
8/28/2018	Chloromethane	EPA 624	0.79	0.18	0.50	µg/L	0.7900		
	Halomethanes							**1.0083**	**1.6500**
7/19/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
7/27/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/1/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/7/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/13/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/28/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
	Carbon Tetrachloride							**0.0500**	**0.0500**
7/19/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
7/27/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/1/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/7/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/13/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/28/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
	Chlorobenzene							**0.0650**	**0.0650**
7/19/2018	Chloroform	EPA 624	2.2	0.10	0.50	µg/L	2.2000		
7/27/2018	Chloroform	EPA 624	1.5	0.10	0.50	µg/L	1.5000		
8/1/2018	Chloroform	EPA 624	1.3	0.10	0.50	µg/L	1.3000		
8/7/2018	Chloroform	EPA 624	1.9	0.10	0.50	µg/L	1.9000		
8/13/2018	Chloroform	EPA 624	0.57	0.10	0.50	µg/L	0.5700		
8/28/2018	Chloroform	EPA 624	2.9	0.10	0.50	µg/L	2.9000		
	Chloroform							**1.7283**	**2.9000**
7/19/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/19/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,3-Dichloropropene							**0.1150**	**0.1150**
7/19/2018	Dibromochloromethane	EPA 624	ND	0.085	0.50	µg/L	0.0425		
7/27/2018	Dibromochloromethane	EPA 624	0.14	0.085	0.50	µg/L	0.1400		
8/1/2018	Dibromochloromethane	EPA 624	ND	0.085	0.50	µg/L	0.0425		
8/7/2018	Dibromochloromethane	EPA 624	0.13	0.085	0.50	µg/L	0.1300		
8/13/2018	Dibromochloromethane	EPA 624	ND	0.085	0.50	µg/L	0.0425		
8/28/2018	Dibromochloromethane	EPA 624	ND	0.085	0.50	µg/L	0.0425		
	Dibromochloromethane							**0.0733**	**0.1400**
7/19/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
	Dichloromethane							**0.0550**	**0.0550**

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	Ethylbenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
7/27/2018	Ethylbenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/1/2018	Ethylbenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/7/2018	Ethylbenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/13/2018	Ethylbenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/28/2018	Ethylbenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
	Ethylbenzene							**0.0650**	**0.0650**
7/19/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
7/27/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/7/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/13/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
	Hexachloroethane							**0.0750**	**0.0750**
7/19/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
	Tetrachloroethene (PCE)							**0.0550**	**0.0550**
7/19/2018	Toluene	EPA 624	0.49	0.14	0.50	µg/L	0.4900		
7/27/2018	Toluene	EPA 624	0.59	0.14	0.50	µg/L	0.5900		
8/1/2018	Toluene	EPA 624	0.68	0.14	0.50	µg/L	0.6800		
8/7/2018	Toluene	EPA 624	0.43	0.14	0.50	µg/L	0.4300		
8/13/2018	Toluene	EPA 624	0.28	0.14	0.50	µg/L	0.2800		
8/28/2018	Toluene	EPA 624	ND	0.14	0.50	µg/L	0.0700		
	Toluene							**0.4233**	**0.6800**
7/19/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
7/27/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/1/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/7/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/13/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/28/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
	Trichloroethene (TCE)							**0.0650**	**0.0650**
7/19/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
7/27/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/1/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/7/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/13/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/28/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
	Vinyl Chloride							**0.0750**	**0.0750**
7/19/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/27/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/1/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/7/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/28/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
	1,2-Diphenylhydrazine (as Azobenzene)							**0.0500**	**0.0500**
7/19/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
7/27/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/1/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/7/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/13/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
	2,4-Dinitrotoluene							**0.0500**	**0.0500**
7/19/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
7/27/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
8/1/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
8/7/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
8/13/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
8/28/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
	3,3-Dichlorobenzidine							**0.2700**	**0.2700**
7/19/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
7/27/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
8/1/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
8/7/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
8/13/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
8/28/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
	Benzidine							**0.7000**	**0.7000**
7/19/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
7/27/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/1/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/7/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/13/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
	Bis(2-chloroethoxy)methane							**0.0500**	**0.0500**
7/19/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
7/27/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/7/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/13/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
	Bis(2-chloroethyl) ether							**0.0750**	**0.0750**
7/19/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
7/27/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
8/1/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
8/7/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
8/13/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
8/28/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
	Bis(2-chloroisopropyl) ether							**0.0650**	**0.0650**

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
7/27/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
8/1/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
8/7/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
8/13/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
8/28/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
	Bis(2-ethylhexyl) phthalate							**0.1450**	**0.1450**
7/19/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
7/27/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/1/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/7/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/13/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/28/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
	Diethyl phthalate							**0.0500**	**0.0500**
7/19/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
7/27/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/1/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/7/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/13/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/28/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
	Dimethyl phthalate							**0.0500**	**0.0500**
7/19/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
7/27/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/1/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/7/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/13/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/28/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
	Di-n-butyl phthalate							**0.0700**	**0.0700**
7/19/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
7/27/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
8/1/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
8/7/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
8/13/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
8/28/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
	Fluoranthene							**0.0006**	**0.0006**
7/19/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
7/27/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/7/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/13/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
	Hexachlorobenzene							**0.0750**	**0.0750**
7/19/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
7/27/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
8/1/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
8/7/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
8/28/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
	Hexachlorobutadiene							**0.0650**	**0.0650**
7/19/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
7/27/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
8/1/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
8/7/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
8/13/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
8/28/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
	Hexachlorocyclopentadiene							**0.0700**	**0.0700**
7/19/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
7/27/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/1/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/7/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/13/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/28/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
	Isophorone							**0.0550**	**0.0550**
7/19/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
7/27/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/1/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/7/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/13/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/28/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
	Nitrobenzene							**0.0550**	**0.0550**
7/19/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
7/27/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
8/1/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
8/7/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
8/13/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
8/28/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
	N-Nitrosodimethylamine (NDMA)							**0.2400**	**0.2400**
7/19/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
7/27/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/1/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/7/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/13/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
	N-Nitrosodi-n-propylamine (NDPA)							**0.0500**	**0.0500**
7/19/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
7/27/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
8/1/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
8/7/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
8/13/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
8/28/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
	N-Nitrosodiphenylamine (as DPA)							**0.1200**	**0.1200**

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
7/19/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
7/19/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
7/19/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
7/19/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
7/19/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
7/19/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
7/19/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
7/19/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
7/19/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
7/19/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
7/19/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
7/19/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	
7/27/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
7/27/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
7/27/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
7/27/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
7/27/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
7/27/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
7/27/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
7/27/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
7/27/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
7/27/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
7/27/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
7/27/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
7/27/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	
8/1/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
8/1/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
8/1/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
8/1/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
8/1/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
8/1/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
8/1/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
8/1/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
8/1/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
8/1/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
8/1/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
8/1/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
8/1/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	
8/7/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
8/7/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
8/7/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
8/7/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
8/7/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
8/7/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
8/7/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
8/7/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
8/7/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
8/7/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
8/7/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
8/7/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
8/7/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
8/13/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
8/13/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
8/13/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
8/13/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
8/13/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
8/13/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
8/13/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
8/13/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
8/13/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
8/13/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
8/13/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
8/13/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	
8/28/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
8/28/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
8/28/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
8/28/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
8/28/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
8/28/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
8/28/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
8/28/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
8/28/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
8/28/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
8/28/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
8/28/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
8/28/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	
	PAHs							**0.0169**	**0.0169**
7/19/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
7/27/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/1/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/7/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/13/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/28/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
	2,4,6-Trichlorophenol							**0.0700**	**0.0700**
7/19/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
7/19/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/19/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
7/19/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/19/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
7/19/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
7/27/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
7/27/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/27/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
7/27/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/27/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
7/27/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
8/1/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/1/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/1/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
8/1/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/1/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
8/1/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
8/7/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/7/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/7/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
8/7/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/7/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
8/7/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
8/13/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/13/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/13/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
8/13/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/13/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
8/13/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
8/28/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/28/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/28/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
8/28/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/28/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
8/28/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
	Chlorinated Phenolics							**0.4400**	**0.4400**
7/19/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
7/27/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/1/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/7/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/13/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/28/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
	2,4-Dinitrophenol							**0.1350**	**0.1350**
7/19/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
7/27/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/1/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/7/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/13/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/28/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
	4,6-Dinitro-2-methylphenol							**0.0550**	**0.0550**
7/19/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
7/19/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
7/19/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
7/19/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
7/19/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
7/19/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
7/19/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	
7/27/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
7/27/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
7/27/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
7/27/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
7/27/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
7/27/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
7/27/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Feed Water									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/1/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/1/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
8/1/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/1/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/1/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
8/1/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	
8/7/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/7/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/7/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
8/7/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/7/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/7/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
8/7/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	
8/13/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/13/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/13/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
8/13/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/13/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/13/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
8/13/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	
8/28/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/28/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
8/28/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/28/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
8/28/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	
	Phenolic Compounds (non-chlorinated)							**0.6000**	**0.6000**

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
7/27/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
8/1/2018	5-Day BOD	SM 5210 B	ND	2.29	3.00	mg/L	1.1450		
8/7/2018	5-Day BOD	SM 5210 B	2.33 DNQ	2.29	3.00	mg/L	2.3300		
8/13/2018	Biochemical Oxygen Demand	SM 5210 B	2		1.00	mg/L	2.0000		
8/28/2018	5-Day BOD	SM 5210 B	4	2.29	3.00	mg/L	4.0000		
	5-Day BOD							**1.9608**	**4.0000**
7/19/2018	Suspended Solids	SM 2540 D	1.6 DNQ	1.00	2.00	mg/L	1.6000		
7/27/2018	Suspended Solids	SM 2540 D	1.2 DNQ	1.00	2.00	mg/L	1.2000		
8/1/2018	Suspended Solids	SM 2540 D	ND	1.00	2.00	mg/L	0.5000		
8/7/2018	Suspended Solids	SM 2540 D	1.6 DNQ	1.00	2.00	mg/L	1.6000		
8/13/2018	Suspended Solids	SM 2540 D	38		5.00	mg/L	38.0000		
8/28/2018	Suspended Solids	SM 2540 D	12	1.00	2.00	mg/L	12.0000		
	Suspended Solids							**9.1500**	**38.0000**
7/19/2018	Total Residual Chlorine	SM 4500 Cl-G	1.92	0.01	0.02	ppm	1.9200		
7/27/2018	Total Residual Chlorine	SM 4500 Cl-G	0.93	0.01	0.02	ppm	0.9300		
8/1/2018	Total Residual Chlorine	SM 4500 Cl-G	1.80	0.01	0.02	ppm	1.8000		
8/7/2018	Total Residual Chlorine	SM 4500 Cl-G	2.06	0.01	0.02	ppm	2.0600		
8/13/2018	Chlorine, Residual	SM 4500 Cl B	61		0.10	mg/L	61.0000		
8/28/2018	Total Residual Chlorine	SM 4500 Cl-G	0.99	0.01	0.02	ppm	0.9900		
	Total Residual Chlorine							**11.4500**	**61.0000**
7/19/2018	Arsenic	EPA 200.8 DRC	10		0.10	µg/L	10.0000		
7/27/2018	Arsenic	EPA 200.8 DRC	8.7		0.10	µg/L	8.7000		
8/1/2018	Arsenic	EPA 200.8 DRC	8.4		0.10	µg/L	8.4000		
8/7/2018	Arsenic	EPA 200.8 DRC	9.1		0.50	µg/L	9.1000		
8/13/2018	Arsenic	EPA 200.8 DRC	9.6		0.50	µg/L	9.6000		
8/28/2018	Arsenic	EPA 200.8 DRC	8.5		0.30	µg/L	8.5000		
	Arsenic							**9.0500**	**10.0000**
7/19/2018	Copper	EPA 200.8 DRC	15		1.10	µg/L	15.0000		
7/27/2018	Copper	EPA 200.8 DRC	17		1.10	µg/L	17.0000		
8/1/2018	Copper	EPA 200.8 DRC	15		1.10	µg/L	15.0000		
8/7/2018	Copper	EPA 200.8 DRC	11		1.10	µg/L	11.0000		
8/13/2018	Copper	EPA 200.8 DRC	13		3.30	µg/L	13.0000		
8/28/2018	Copper	EPA 200.8 DRC	24		1.10	µg/L	24.0000		
	Copper							**15.8333**	**24.0000**
7/19/2018	Nickel	EPA 200.8 DRC	20		1.00	µg/L	20.0000		
7/27/2018	Nickel	EPA 200.8 DRC	20		1.00	µg/L	20.0000		
8/1/2018	Nickel	EPA 200.8 DRC	20		1.00	µg/L	20.0000		
8/7/2018	Nickel	EPA 200.8 DRC	14		1.00	µg/L	14.0000		
8/13/2018	Nickel	EPA 200.8 DRC	21		3.00	µg/L	21.0000		
8/28/2018	Nickel	EPA 200.8 DRC	23		1.00	µg/L	23.0000		
	Nickel							**19.6667**	**23.0000**
7/19/2018	4,4'-DDD	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
7/27/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/1/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/7/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		
8/13/2018	4,4'-DDD	EPA 608	ND	0.00072	0.05	µg/L	0.0004		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/28/2018	4,4'-DDD	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
7/19/2018	4,4'-DDE	EPA 608	ND	0.01200	0.10	µg/L	0.0060		
7/27/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/1/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/7/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/13/2018	4,4'-DDE	EPA 608	ND	0.00061	0.05	µg/L	0.0003		
8/28/2018	4,4'-DDE	EPA 608	ND	0.01200	0.10	µg/L	0.0060		
7/19/2018	4,4'-DDT	EPA 608	ND	0.0140	0.10	µg/L	0.0070		
7/27/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/1/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/7/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/13/2018	4,4'-DDT	EPA 608	ND	0.0007	0.01	µg/L	0.0004		
8/28/2018	4,4'-DDT	EPA 608	ND	0.0140	0.10	µg/L	0.0070		
	DDT							**0.0073**	**0.0200**
7/19/2018	Aldrin	EPA 608	ND	0.01600	0.100	µg/L	0.0080		
7/27/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/1/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/7/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/13/2018	Aldrin	EPA 608	ND	0.00079	0.005	µg/L	0.0004		
8/28/2018	Aldrin	EPA 608	ND	0.01600	0.100	µg/L	0.0080		
	Aldrin							**0.0029**	**0.0080**
7/19/2018	alpha-BHC	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
7/27/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/1/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/7/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/13/2018	alpha-BHC	EPA 608	ND	0.0025	0.01	µg/L	0.0013		
8/28/2018	alpha-BHC	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
7/19/2018	beta-BHC	EPA 608	ND	0.01100	0.100	µg/L	0.0055		
7/27/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/1/2018	beta-BHC	EPA 608	ND	0.00110	0.010	µg/L	0.0006		
8/7/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/13/2018	beta-BHC	EPA 608	ND	0.00054	0.005	µg/L	0.0003		
8/28/2018	beta-BHC	EPA 608	ND	0.01100	0.100	µg/L	0.0055		
7/19/2018	Lindane	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
7/27/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/1/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/7/2018	Lindane	EPA 608	ND	0.0025	0.02	µg/L	0.0013		
8/13/2018	Lindane	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
8/28/2018	Lindane	EPA 608	ND	0.0500	0.10	µg/L	0.0250		
7/19/2018	delta-BHC	EPA 608	ND	0.0120	0.100	µg/L	0.0060		
7/27/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/1/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/7/2018	delta-BHC	EPA 608	ND	0.0006	0.005	µg/L	0.0003		
8/13/2018	delta-BHC	EPA 608	ND	0.0120	0.100	µg/L	0.0060		
8/28/2018	delta-BHC	EPA 608	ND	0.0120	0.100	µg/L	0.0060		
	HCH							**0.0275**	**0.0615**
7/19/2018	Aroclor-1016	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/27/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Aroclor-1016	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1016	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1221	EPA 608	ND	1.300	2.00	µg/L	0.6500		
7/27/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/1/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/7/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/13/2018	Aroclor-1221	EPA 608	ND	0.063	0.50	µg/L	0.0315		
8/28/2018	Aroclor-1221	EPA 608	ND	1.300	2.00	µg/L	0.6500		
7/19/2018	Aroclor-1232	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/27/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/13/2018	Aroclor-1232	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1232	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1242	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/27/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/13/2018	Aroclor-1242	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1242	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1248	EPA 608	ND	0.400	2.00	µg/L	0.2000		
7/27/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/1/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/7/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/13/2018	Aroclor-1248	EPA 608	ND	0.020	0.50	µg/L	0.0100		
8/28/2018	Aroclor-1248	EPA 608	ND	0.400	2.00	µg/L	0.2000		
7/19/2018	Aroclor-1254	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/27/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/1/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/7/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/13/2018	Aroclor-1254	EPA 608	ND	0.050	0.50	µg/L	0.0250		
8/28/2018	Aroclor-1254	EPA 608	ND	1.000	2.00	µg/L	0.5000		
7/19/2018	Aroclor-1260	EPA 608	ND	0.300	2.00	µg/L	0.1500		
7/27/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/1/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/7/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/13/2018	Aroclor-1260	EPA 608	ND	0.015	0.50	µg/L	0.0075		
8/28/2018	Aroclor-1260	EPA 608	ND	0.300	2.00	µg/L	0.1500		
	PCBs							**1.0993**	**3.0000**
7/19/2018	Chlordane	EPA 608	ND	0.5200	2.00	µg/L	0.2600		
7/27/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/1/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/7/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/13/2018	Chlordane	EPA 608	ND	0.0260	0.10	µg/L	0.0130		
8/28/2018	Chlordane	EPA 608	ND	0.5200	2.00	µg/L	0.2600		
	Chlordane							**0.0953**	**0.2600**
7/19/2018	Dieldrin	EPA 608	ND	0.01900	0.10	µg/L	0.0095		
7/27/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
8/1/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
8/7/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		
8/13/2018	Dieldrin	EPA 608	ND	0.00097	0.01	µg/L	0.0005		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/28/2018	Dieldrin	EPA 608	ND	0.01900	0.10	µg/L	0.0095		
	Dieldrin							**0.0035**	**0.0095**
7/19/2018	Endosulfan I	EPA 608	ND	0.01800	0.10	µg/L	0.0090		
7/27/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/1/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/7/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/13/2018	Endosulfan I	EPA 608	ND	0.00089	0.02	µg/L	0.0004		
8/28/2018	Endosulfan I	EPA 608	ND	0.01800	0.10	µg/L	0.0090		
7/19/2018	Endosulfan II	EPA 608	ND	0.0360	0.10	µg/L	0.0180		
7/27/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/1/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/7/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/13/2018	Endosulfan II	EPA 608	ND	0.0018	0.01	µg/L	0.0009		
8/28/2018	Endosulfan II	EPA 608	ND	0.0360	0.10	µg/L	0.0180		
7/19/2018	Endosulfan Sulfate	EPA 608	ND	0.01500	0.10	µg/L	0.0075		
7/27/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/1/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/7/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/13/2018	Endosulfan Sulfate	EPA 608	ND	0.00074	0.05	µg/L	0.0004		
8/28/2018	Endosulfan Sulfate	EPA 608	ND	0.01500	0.10	µg/L	0.0075		
	Endosulfan							**0.0126**	**0.0345**
7/19/2018	Endrin	EPA 608	ND	0.01600	0.10	µg/L	0.0080		
7/27/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/1/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/7/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/13/2018	Endrin	EPA 608	ND	0.00081	0.01	µg/L	0.0004		
8/28/2018	Endrin	EPA 608	ND	0.01600	0.10	µg/L	0.0080		
	Endrin							**0.0029**	**0.0080**
7/19/2018	Heptachlor	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
7/27/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/1/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/7/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/13/2018	Heptachlor	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/28/2018	Heptachlor	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
	Heptachlor							**0.0026**	**0.0070**
7/19/2018	Heptachlor Epoxide	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
7/27/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/1/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/7/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/13/2018	Heptachlor Epoxide	EPA 608	ND	0.00069	0.01	µg/L	0.0003		
8/28/2018	Heptachlor Epoxide	EPA 608	ND	0.01400	0.10	µg/L	0.0070		
	Heptachlor Epoxide							**0.0026**	**0.0070**
7/19/2018	Toxaphene	EPA 608	ND	0.7000	2.00	µg/L	0.3500		
7/27/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/1/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/7/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/13/2018	Toxaphene	EPA 608	ND	0.0350	0.50	µg/L	0.0175		
8/28/2018	Toxaphene	EPA 608	ND	0.7000	2.00	µg/L	0.3500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
	Toxaphene							**0.1283**	**0.3500**
7/19/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
7/27/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/1/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/7/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/13/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/28/2018	1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
	1,1,1-Trichloroethane							**0.0700**	**0.0700**
7/19/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,1,2,2-Tetrachloroethane							**0.0600**	**0.0600**
7/19/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
7/27/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/1/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/7/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/13/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
8/28/2018	1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	µg/L	0.0700		
	1,1,2-Trichloroethane							**0.0700**	**0.0700**
7/19/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	1,1-Dichloroethene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,1-Dichloroethene							**0.0600**	**0.0600**
7/19/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/19/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
	Dichlorobenzenes							**0.1150**	**0.1150**
7/19/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
7/27/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/1/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/7/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/13/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/28/2018	1,2-Dichloroethane	EPA 624	ND	0.10	0.50	µg/L	0.0500		
	1,2-Dichloroethane							**0.0500**	**0.0500**
7/19/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
7/27/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/1/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/7/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/13/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	20.00	µg/L	0.0600		
8/28/2018	1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,4-Dichlorobenzene							**0.0600**	**0.0600**
7/19/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
7/27/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/1/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/7/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/13/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/28/2018	Benzene	EPA 624	ND	0.15	0.50	µg/L	0.0750		
	Benzene							**0.0750**	**0.0750**
7/19/2018	Bromodichloromethane	EPA 624	1.6	0.10	0.50	µg/L	1.6000		
7/27/2018	Bromodichloromethane	EPA 624	1.6	0.10	0.50	µg/L	1.6000		
8/1/2018	Bromodichloromethane	EPA 624	1.6	0.10	0.50	µg/L	1.6000		
8/7/2018	Bromodichloromethane	EPA 624	2.3	0.10	0.50	µg/L	2.3000		
8/13/2018	Bromodichloromethane	EPA 624	1.2	0.10	0.50	µg/L	1.2000		
8/28/2018	Bromodichloromethane	EPA 624	1.1	0.10	0.50	µg/L	1.1000		
	Bromodichloromethane							**1.5667**	**2.3000**
7/19/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
7/27/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/1/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/7/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/13/2018	Bromoform	EPA 624	ND	0.14	1.00	µg/L	0.0700		
8/28/2018	Bromoform	EPA 624	ND	0.14	0.50	µg/L	0.0700		
7/19/2018	Bromomethane	EPA 624	ND	0.19	50.00	µg/L	0.0950		
7/27/2018	Bromomethane	EPA 624	0.54	0.19	50.00	µg/L	0.5400		
8/1/2018	Bromomethane	EPA 624	ND	0.19	50.00	µg/L	0.0950		
8/7/2018	Bromomethane	EPA 624	ND	0.19	50.00	µg/L	0.0950		
8/13/2018	Bromomethane	EPA 624	0.31	0.19	50.00	µg/L	0.3100		
8/28/2018	Bromomethane	EPA 624	ND	0.19	1.00	µg/L	0.0950		
7/19/2018	Chloromethane	EPA 624	0.49	0.18	0.50	µg/L	0.4900		
7/27/2018	Chloromethane	EPA 624	0.73	0.18	0.50	µg/L	0.7300		
8/1/2018	Chloromethane	EPA 624	0.63	0.18	0.50	µg/L	0.6300		
8/7/2018	Chloromethane	EPA 624	0.42	0.18	0.50	µg/L	0.4200		
8/13/2018	Chloromethane	EPA 624	0.97	0.18	0.50	µg/L	0.9700		
8/28/2018	Chloromethane	EPA 624	0.45	0.18	0.50	µg/L	0.4500		
	Halomethanes							**0.8900**	**1.3500**
7/19/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
7/27/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/1/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/7/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/13/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		
8/28/2018	Carbon Tetrachloride	EPA 624	ND	0.10	0.50	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
	Carbon Tetrachloride							**0.0500**	**0.0500**
7/19/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
7/27/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/1/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/7/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/13/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/28/2018	Chlorobenzene	EPA 624	ND	0.13	0.50	µg/L	0.0650		
	Chlorobenzene							**0.0650**	**0.0650**
7/19/2018	Chloroform	EPA 624	5	0.10	0.50	µg/L	5.0000		
7/27/2018	Chloroform	EPA 624	5.9	0.10	0.50	µg/L	5.9000		
8/1/2018	Chloroform	EPA 624	5.6	0.10	0.50	µg/L	5.6000		
8/7/2018	Chloroform	EPA 624	7.1	0.10	0.50	µg/L	7.1000		
8/13/2018	Chloroform	EPA 624	5	0.10	0.50	µg/L	5.0000		
8/28/2018	Chloroform	EPA 624	3.4	0.10	0.50	µg/L	3.4000		
	Chloroform							**5.3333**	**7.1000**
7/19/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/19/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
7/27/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/1/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/7/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/13/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
8/28/2018	trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	µg/L	0.0600		
	1,3-Dichloropropene							**0.1150**	**0.1150**
7/19/2018	Dibromochloromethane	EPA 624	0.23	0.085	0.50	µg/L	0.2300		
7/27/2018	Dibromochloromethane	EPA 624	0.3	0.085	0.50	µg/L	0.3000		
8/1/2018	Dibromochloromethane	EPA 624	0.3	0.085	0.50	µg/L	0.3000		
8/7/2018	Dibromochloromethane	EPA 624	0.41	0.085	0.50	µg/L	0.4100		
8/13/2018	Dibromochloromethane	EPA 624	0.22	0.085	0.50	µg/L	0.2200		
8/28/2018	Dibromochloromethane	EPA 624	0.19	0.085	0.50	µg/L	0.1900		
	Dibromochloromethane							**0.2750**	**0.4100**
7/19/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	Dichloromethane	EPA 624	ND	0.11	0.50	µg/L	0.0550		
	Dichloromethane							**0.0550**	**0.0550**
7/19/2018	Ethylbenzene	EPA 624	0.22	0.13	0.50	µg/L	0.2200		
7/27/2018	Ethylbenzene	EPA 624	0.19	0.13	0.50	µg/L	0.1900		
8/1/2018	Ethylbenzene	EPA 624	0.22	0.13	0.50	µg/L	0.2200		
8/7/2018	Ethylbenzene	EPA 624	0.22	0.13	0.50	µg/L	0.2200		
8/13/2018	Ethylbenzene	EPA 624	0.17	0.13	0.50	µg/L	0.1700		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/28/2018	Ethylbenzene	EPA 624	0.16	0.13	0.50	µg/L	0.1600		
	Ethylbenzene							**0.1967**	**0.2200**
7/19/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
7/27/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/7/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/13/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	Hexachloroethane	EPA 624	ND	0.15	1.00	µg/L	0.0750		
	Hexachloroethane							**0.0750**	**0.0750**
7/19/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
7/27/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/1/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/7/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/13/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
8/28/2018	Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	µg/L	0.0550		
	Tetrachloroethene (PCE)							**0.0550**	**0.0550**
7/19/2018	Toluene	EPA 624	0.54	0.14	0.50	µg/L	0.5400		
7/27/2018	Toluene	EPA 624	0.52	0.14	0.50	µg/L	0.5200		
8/1/2018	Toluene	EPA 624	0.81	0.14	0.50	µg/L	0.8100		
8/7/2018	Toluene	EPA 624	0.64	0.14	0.50	µg/L	0.6400		
8/13/2018	Toluene	EPA 624	0.43	0.14	0.50	µg/L	0.4300		
8/28/2018	Toluene	EPA 624	0.18	0.14	0.50	µg/L	0.1800		
	Toluene							**0.5200**	**0.8100**
7/19/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
7/27/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/1/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/7/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/13/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
8/28/2018	Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	µg/L	0.0650		
	Trichloroethene (TCE)							**0.0650**	**0.0650**
7/19/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
7/27/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/1/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/7/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/13/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
8/28/2018	Vinyl Chloride	EPA 624	ND	0.15	0.50	µg/L	0.0750		
	Vinyl Chloride							**0.0750**	**0.0750**
7/19/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.50	µg/L	0.2500		
7/27/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/1/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/7/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/13/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/28/2018	1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.50	µg/L	0.2500		
	1,2-Diphenylhydrazine (as Azobenzene)							**0.1833**	**0.2500**
7/19/2018	2,4-Dinitrotoluene	EPA 625	ND	0.50	5.00	µg/L	0.2500		
7/27/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/1/2018	2,4-Dinitrotoluene	EPA 625	ND	0.50	5.00	µg/L	0.2500		
8/7/2018	2,4-Dinitrotoluene	EPA 625	ND	0.50	5.00	µg/L	0.2500		
8/13/2018	2,4-Dinitrotoluene	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	2,4-Dinitrotoluene	EPA 625	ND	0.50	5.00	µg/L	0.2500		
	2,4-Dinitrotoluene							**0.1833**	**0.2500**
7/19/2018	3,3-Dichlorobenzidine	EPA 625	ND	2.70	10.00	µg/L	1.3500		
7/27/2018	3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.00	µg/L	0.2700		
8/1/2018	3,3-Dichlorobenzidine	EPA 625	ND	2.70	10.00	µg/L	1.3500		
8/7/2018	3,3-Dichlorobenzidine	EPA 625	ND	2.70	10.00	µg/L	1.3500		
8/13/2018	3,3-Dichlorobenzidine	EPA 625	ND	11.00	40.00	µg/L	5.5000		
8/28/2018	3,3-Dichlorobenzidine	EPA 625	ND	2.70	10.00	µg/L	1.3500		
	3,3-Dichlorobenzidine							**1.8617**	**5.5000**
7/19/2018	Benzidine	EPA 625	ND	7.0000	25.00	µg/L	3.5000		
7/27/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
8/1/2018	Benzidine	EPA 625	ND	7.0000	25.00	µg/L	3.5000		
8/7/2018	Benzidine	EPA 625	ND	7.0000	25.00	µg/L	3.5000		
8/13/2018	Benzidine	EPA 625	ND	1.4000	5.00	µg/L	0.7000		
8/28/2018	Benzidine	EPA 625	ND	7.0000	25.00	µg/L	3.5000		
	Benzidine							**2.5667**	**3.5000**
7/19/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.00	µg/L	0.2500		
7/27/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/1/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.00	µg/L	0.2500		
8/7/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.00	µg/L	0.2500		
8/13/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.00	µg/L	0.2500		
	Bis(2-chloroethoxy)methane							**0.1833**	**0.2500**
7/19/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.50	µg/L	0.3700		
7/27/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.50	µg/L	0.3700		
8/7/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.50	µg/L	0.3700		
8/13/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.50	µg/L	0.3700		
	Bis(2-chloroethyl) ether							**0.2717**	**0.3700**
7/19/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.50	µg/L	0.3150		
7/27/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
8/1/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.50	µg/L	0.3150		
8/7/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.50	µg/L	0.3150		
8/13/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.00	µg/L	0.0650		
8/28/2018	Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.50	µg/L	0.3150		
	Bis(2-chloroisopropyl) ether							**0.2317**	**0.3150**
7/19/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.50	5.00	µg/L	0.7500		
7/27/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
8/1/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.50	5.00	µg/L	0.7500		
8/7/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.50	5.00	µg/L	0.7500		
8/13/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.00	µg/L	0.1450		
8/28/2018	Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.50	5.00	µg/L	0.7500		
	Bis(2-ethylhexyl) phthalate							**0.5483**	**0.7500**

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	Diethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
7/27/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/1/2018	Diethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/7/2018	Diethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/13/2018	Diethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/28/2018	Diethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
	Diethyl phthalate							**0.1833**	**0.2500**
7/19/2018	Dimethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
7/27/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/1/2018	Dimethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/7/2018	Dimethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/13/2018	Dimethyl phthalate	EPA 625	ND	0.10	2.00	µg/L	0.0500		
8/28/2018	Dimethyl phthalate	EPA 625	ND	0.50	2.50	µg/L	0.2500		
	Dimethyl phthalate							**0.1833**	**0.2500**
7/19/2018	Di-n-butyl phthalate	EPA 625	ND	0.68	10.00	µg/L	0.3400		
7/27/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/1/2018	Di-n-butyl phthalate	EPA 625	ND	0.68	10.00	µg/L	0.3400		
8/7/2018	Di-n-butyl phthalate	EPA 625	ND	0.68	10.00	µg/L	0.3400		
8/13/2018	Di-n-butyl phthalate	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/28/2018	Di-n-butyl phthalate	EPA 625	ND	0.68	10.00	µg/L	0.3400		
	Di-n-butyl phthalate							**0.2500**	**0.3400**
7/19/2018	Fluoranthene	EPA 625	ND	0.0061	0.05	µg/L	0.0031		
7/27/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
8/1/2018	Fluoranthene	EPA 625	ND	0.0061	0.05	µg/L	0.0031		
8/7/2018	Fluoranthene	EPA 625	ND	0.0061	0.05	µg/L	0.0031		
8/13/2018	Fluoranthene	EPA 625	ND	0.0012	0.05	µg/L	0.0006		
8/28/2018	Fluoranthene	EPA 625	ND	0.0061	0.05	µg/L	0.0031		
	Fluoranthene							**0.0022**	**0.0031**
7/19/2018	Hexachlorobenzene	EPA 625	ND	0.76	2.50	µg/L	0.3800		
7/27/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/1/2018	Hexachlorobenzene	EPA 625	ND	0.76	2.50	µg/L	0.3800		
8/7/2018	Hexachlorobenzene	EPA 625	ND	0.76	2.50	µg/L	0.3800		
8/13/2018	Hexachlorobenzene	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/28/2018	Hexachlorobenzene	EPA 625	ND	0.76	2.50	µg/L	0.3800		
	Hexachlorobenzene							**0.2783**	**0.3800**
7/19/2018	Hexachlorobutadiene	EPA 625	ND	0.67	2.50	µg/L	0.3350		
7/27/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
8/1/2018	Hexachlorobutadiene	EPA 625	ND	0.67	2.50	µg/L	0.3350		
8/7/2018	Hexachlorobutadiene	EPA 625	ND	0.67	2.50	µg/L	0.3350		
8/13/2018	Hexachlorobutadiene	EPA 625	ND	0.13	1.00	µg/L	0.0650		
8/28/2018	Hexachlorobutadiene	EPA 625	ND	0.67	2.50	µg/L	0.3350		
	Hexachlorobutadiene							**0.2450**	**0.3350**
7/19/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.00	µg/L	0.3400		
7/27/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
8/1/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.00	µg/L	0.3400		
8/7/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.00	µg/L	0.3400		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.00	µg/L	0.0700		
8/28/2018	Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.00	µg/L	0.3400		
	Hexachlorocyclopentadiene							**0.2500**	**0.3400**
7/19/2018	Isophorone	EPA 625	ND	0.57	2.50	µg/L	0.2850		
7/27/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/1/2018	Isophorone	EPA 625	ND	0.57	2.50	µg/L	0.2850		
8/7/2018	Isophorone	EPA 625	ND	0.57	2.50	µg/L	0.2850		
8/13/2018	Isophorone	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/28/2018	Isophorone	EPA 625	ND	0.57	2.50	µg/L	0.2850		
	Isophorone							**0.2083**	**0.2850**
7/19/2018	Nitrobenzene	EPA 625	ND	0.53	2.50	µg/L	0.2650		
7/27/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/1/2018	Nitrobenzene	EPA 625	ND	0.53	2.50	µg/L	0.2650		
8/7/2018	Nitrobenzene	EPA 625	ND	0.53	2.50	µg/L	0.2650		
8/13/2018	Nitrobenzene	EPA 625	ND	0.11	1.00	µg/L	0.0550		
8/28/2018	Nitrobenzene	EPA 625	ND	0.53	2.50	µg/L	0.2650		
	Nitrobenzene							**0.1950**	**0.2650**
7/19/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.40	5.00	µg/L	1.2000		
7/27/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
8/1/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.40	5.00	µg/L	1.2000		
8/7/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.40	5.00	µg/L	1.2000		
8/13/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.00	µg/L	0.2400		
8/28/2018	N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.40	5.00	µg/L	1.2000		
	N-Nitrosodimethylamine (NDMA)							**0.8800**	**1.2000**
7/19/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.00	µg/L	0.2550		
7/27/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/1/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.00	µg/L	0.2550		
8/7/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.00	µg/L	0.2550		
8/13/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/28/2018	N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.00	µg/L	0.2550		
	N-Nitrosodi-n-propylamine (NDPA)							**0.1867**	**0.2550**
7/19/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.20	2.50	µg/L	0.6000		
7/27/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
8/1/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.20	2.50	µg/L	0.6000		
8/7/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.20	2.50	µg/L	0.6000		
8/13/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.00	µg/L	0.1200		
8/28/2018	N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.20	2.50	µg/L	0.6000		
	N-Nitrosodiphenylamine (as DPA)							**0.4400**	**0.6000**
7/19/2018	Acenaphthylene	EPA 625	ND	0.0110	0.20	µg/L	0.0055		
7/19/2018	Anthracene	EPA 625	ND	0.0098	2.00	µg/L	0.0049		
7/19/2018	Benzo(a)anthracene	EPA 625	ND	0.0110	5.00	µg/L	0.0055		
7/19/2018	Benzo(a)pyrene	EPA 625	ND	0.0160	2.00	µg/L	0.0080		
7/19/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0100	10.00	µg/L	0.0050		
7/19/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0190	0.10	µg/L	0.0095		
7/19/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0140	2.00	µg/L	0.0070		
7/19/2018	Chrysene	EPA 625	ND	0.0057	5.00	µg/L	0.0029		
7/19/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0160	0.10	µg/L	0.0080		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
7/19/2018	Fluorene	EPA 625	ND	0.0220	0.10	µg/L	0.0110		
7/19/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0130	0.05	µg/L	0.0065		
7/19/2018	Phenanthrene	EPA 625	ND	0.0120	0.050	µg/L	0.0060		
7/19/2018	Pyrene	EPA 625	ND	0.0072	0.050	µg/L	0.0036	0.0834	
7/27/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
7/27/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
7/27/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
7/27/2018	Benzo(a)pyrene	EPA 625	ND	0.0033	2.00	µg/L	0.0017		
7/27/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0021	10.00	µg/L	0.0011		
7/27/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	µg/L	0.0020		
7/27/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.00	µg/L	0.0014		
7/27/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
7/27/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	µg/L	0.0016		
7/27/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		
7/27/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.05	µg/L	0.0014		
7/27/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
7/27/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.0169	
8/1/2018	Acenaphthylene	EPA 625	ND	0.0110	0.20	µg/L	0.0055		
8/1/2018	Anthracene	EPA 625	ND	0.0098	2.00	µg/L	0.0049		
8/1/2018	Benzo(a)anthracene	EPA 625	ND	0.0110	5.00	µg/L	0.0055		
8/1/2018	Benzo(a)pyrene	EPA 625	ND	0.0160	2.00	µg/L	0.0080		
8/1/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0100	10.00	µg/L	0.0050		
8/1/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0190	0.10	µg/L	0.0095		
8/1/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0140	2.00	µg/L	0.0070		
8/1/2018	Chrysene	EPA 625	ND	0.0057	5.00	µg/L	0.0029		
8/1/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0160	0.10	µg/L	0.0080		
8/1/2018	Fluorene	EPA 625	ND	0.0220	0.10	µg/L	0.0110		
8/1/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0130	0.05	µg/L	0.0065		
8/1/2018	Phenanthrene	EPA 625	ND	0.0120	0.050	µg/L	0.0060		
8/1/2018	Pyrene	EPA 625	ND	0.0072	0.050	µg/L	0.0036	0.0834	
8/7/2018	Acenaphthylene	EPA 625	ND	0.0110	0.20	µg/L	0.0055		
8/7/2018	Anthracene	EPA 625	ND	0.0098	2.00	µg/L	0.0049		
8/7/2018	Benzo(a)anthracene	EPA 625	ND	0.0110	5.00	µg/L	0.0055		
8/7/2018	Benzo(a)pyrene	EPA 625	ND	0.0160	2.00	µg/L	0.0080		
8/7/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0100	10.00	µg/L	0.0050		
8/7/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0190	0.10	µg/L	0.0095		
8/7/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0140	2.00	µg/L	0.0070		
8/7/2018	Chrysene	EPA 625	ND	0.0057	5.00	µg/L	0.0029		
8/7/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0160	0.10	µg/L	0.0080		
8/7/2018	Fluorene	EPA 625	ND	0.0220	0.10	µg/L	0.0110		
8/7/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0130	0.05	µg/L	0.0065		
8/7/2018	Phenanthrene	EPA 625	ND	0.0120	0.050	µg/L	0.0060		
8/7/2018	Pyrene	EPA 625	ND	0.0072	0.050	µg/L	0.0036	0.0834	
8/13/2018	Acenaphthylene	EPA 625	ND	0.0023	0.20	µg/L	0.0012		
8/13/2018	Anthracene	EPA 625	ND	0.0020	2.00	µg/L	0.0010		
8/13/2018	Benzo(a)anthracene	EPA 625	ND	0.0023	5.00	µg/L	0.0012		
8/13/2018	Benzo(a)pyrene	EPA 625	ND	0.0660	2.00	µg/L	0.0330		
8/13/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0410	10.00	µg/L	0.0205		
8/13/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0770	0.20	µg/L	0.0385		
8/13/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0550	2.00	µg/L	0.0275		
8/13/2018	Chrysene	EPA 625	ND	0.0011	5.00	µg/L	0.0006		
8/13/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0620	0.20	µg/L	0.0310		
8/13/2018	Fluorene	EPA 625	ND	0.0043	0.10	µg/L	0.0022		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0540	0.20	µg/L	0.0270		
8/13/2018	Phenanthrene	EPA 625	ND	0.0024	0.050	µg/L	0.0012		
8/13/2018	Pyrene	EPA 625	ND	0.0014	0.050	µg/L	0.0007	0.1854	
8/28/2018	Acenaphthylene	EPA 625	ND	0.0110	0.20	µg/L	0.0055		
8/28/2018	Anthracene	EPA 625	ND	0.0098	2.00	µg/L	0.0049		
8/28/2018	Benzo(a)anthracene	EPA 625	ND	0.0110	5.00	µg/L	0.0055		
8/28/2018	Benzo(a)pyrene	EPA 625	ND	0.0160	2.00	µg/L	0.0080		
8/28/2018	Benzo(b)fluoranthene	EPA 625	ND	0.0100	10.00	µg/L	0.0050		
8/28/2018	Benzo(g,h,i)perylene	EPA 625	ND	0.0190	0.10	µg/L	0.0095		
8/28/2018	Benzo(k)fluoranthene	EPA 625	ND	0.0140	2.00	µg/L	0.0070		
8/28/2018	Chrysene	EPA 625	ND	0.0057	5.00	µg/L	0.0029		
8/28/2018	Dibenzo(a,h)anthracene	EPA 625	ND	0.0160	0.10	µg/L	0.0080		
8/28/2018	Fluorene	EPA 625	ND	0.0220	0.10	µg/L	0.0110		
8/28/2018	Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0130	0.05	µg/L	0.0065		
8/28/2018	Phenanthrene	EPA 625	ND	0.0120	0.500	µg/L	0.0060		
8/28/2018	Pyrene	EPA 625	ND	0.0072	0.050	µg/L	0.0036	0.0834	
	PAHs							**0.0893**	**0.1854**
7/19/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
7/27/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/1/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
8/7/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
8/13/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/28/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
	2,4,6-Trichlorophenol							**0.2567**	**0.3500**
7/19/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
7/19/2018	2,4-Dichlorophenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
7/19/2018	2-Chlorophenol	EPA 625	ND	0.56	2.50	µg/L	0.2800		
7/19/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
7/19/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	1.20	5.00	µg/L	0.6000		
7/19/2018	Pentachlorophenol	EPA 625	ND	1.00	5.00	µg/L	0.5000	2.2300	
7/27/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
7/27/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/27/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		
7/27/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
7/27/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
7/27/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.4400	
8/1/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
8/1/2018	2,4-Dichlorophenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/1/2018	2-Chlorophenol	EPA 625	ND	0.56	2.50	µg/L	0.2800		
8/1/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/1/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	1.20	5.00	µg/L	0.6000		
8/1/2018	Pentachlorophenol	EPA 625	ND	1.00	5.00	µg/L	0.5000	2.2300	
8/7/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
8/7/2018	2,4-Dichlorophenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/7/2018	2-Chlorophenol	EPA 625	ND	0.56	2.50	µg/L	0.2800		
8/7/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/7/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	1.20	5.00	µg/L	0.6000		
8/7/2018	Pentachlorophenol	EPA 625	ND	1.00	5.00	µg/L	0.5000	2.2300	
8/13/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.14	10.00	µg/L	0.0700		
8/13/2018	2,4-Dichlorophenol	EPA 625	ND	0.10	1.00	µg/L	0.0500		
8/13/2018	2-Chlorophenol	EPA 625	ND	0.11	2.00	µg/L	0.0550		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/13/2018	4-Chloro-3-methylphenol	EPA 625	0.11	0.10	1.00	µg/L	0.1100		
8/13/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.00	µg/L	0.1150		
8/13/2018	Pentachlorophenol	EPA 625	ND	0.20	1.00	µg/L	0.1000	0.5000	
8/28/2018	2,4,6-Trichlorophenol	EPA 625	ND	0.70	10.00	µg/L	0.3500		
8/28/2018	2,4-Dichlorophenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/28/2018	2-Chlorophenol	EPA 625	ND	0.56	2.50	µg/L	0.2800		
8/28/2018	4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.50	µg/L	0.2500		
8/28/2018	4-Chlorophenyl phenyl ether	EPA 625	ND	1.20	5.00	µg/L	0.6000		
8/28/2018	Pentachlorophenol	EPA 625	ND	1.00	5.00	µg/L	0.5000	2.2300	
	Chlorinated Phenolics							**1.6433**	**2.2300**
7/19/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
7/27/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/1/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
8/7/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
8/13/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/28/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
	2,4-Dinitrophenol							**0.5117**	**0.7000**
7/19/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
7/27/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/1/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
8/7/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
8/13/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/28/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
	4,6-Dinitro-2-methylphenol							**0.1950**	**0.2650**
7/19/2018	2,4-Dimethylphenol	EPA 625	ND	0.76	2.50	µg/L	0.3800		
7/19/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
7/19/2018	2-Nitrophenol	EPA 625	ND	1.10	10.00	µg/L	0.5500		
7/19/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
7/19/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.00	µg/L	0.2500		
7/19/2018	4-Nitrophenol	EPA 625	ND	1.30	5.00	µg/L	0.6500		
7/19/2018	Phenol	EPA 625	ND	0.50	2.50	µg/L	0.2500	3.0450	
7/27/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
7/27/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
7/27/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
7/27/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
7/27/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
7/27/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
7/27/2018	Phenol	EPA 625	ND	0.10	1.00	µg/L	0.0500	0.6000	
8/1/2018	2,4-Dimethylphenol	EPA 625	ND	0.76	2.50	µg/L	0.3800		
8/1/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
8/1/2018	2-Nitrophenol	EPA 625	ND	1.10	10.00	µg/L	0.5500		
8/1/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
8/1/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.00	µg/L	0.2500		
8/1/2018	4-Nitrophenol	EPA 625	ND	1.30	5.00	µg/L	0.6500		
8/1/2018	Phenol	EPA 625	ND	0.50	2.50	µg/L	0.2500	3.0450	
8/7/2018	2,4-Dimethylphenol	EPA 625	ND	0.76	2.50	µg/L	0.3800		
8/7/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
8/7/2018	2-Nitrophenol	EPA 625	ND	1.10	10.00	µg/L	0.5500		
8/7/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
8/7/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.00	µg/L	0.2500		

Compiled Lab Results from Pismo RO Concentrate Sampling - RO Concentrate									
Sample Date	**Analyte**	**Method**	**Result**	**MDL**	**RL**	**Units**	**Calculated Result**	**Average**	**Maximum**
8/7/2018	4-Nitrophenol	EPA 625	ND	1.30	5.00	µg/L	0.6500		
8/7/2018	Phenol	EPA 625	ND	0.50	2.50	µg/L	0.2500	3.0450	
8/13/2018	2,4-Dimethylphenol	EPA 625	ND	0.15	1.00	µg/L	0.0750		
8/13/2018	2,4-Dinitrophenol	EPA 625	ND	0.27	5.00	µg/L	0.1350		
8/13/2018	2-Nitrophenol	EPA 625	ND	0.21	10.00	µg/L	0.1050		
8/13/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.00	µg/L	0.0550		
8/13/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.00	µg/L	0.0500		
8/13/2018	4-Nitrophenol	EPA 625	ND	0.26	5.00	µg/L	0.1300		
8/13/2018	Phenol	EPA 625	0.51	0.10	1.00	µg/L	0.5100	1.0600	
8/28/2018	2,4-Dimethylphenol	EPA 625	ND	0.76	2.50	µg/L	0.3800		
8/28/2018	2,4-Dinitrophenol	EPA 625	ND	1.40	5.00	µg/L	0.7000		
8/28/2018	2-Nitrophenol	EPA 625	ND	1.10	10.00	µg/L	0.5500		
8/28/2018	4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.00	µg/L	0.2650		
8/28/2018	4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.00	µg/L	0.2500		
8/28/2018	4-Nitrophenol	EPA 625	ND	1.30	5.00	µg/L	0.6500		
8/28/2018	Phenol	EPA 625	ND	0.50	2.50	µg/L	0.2500	3.0450	
	Phenolic Compounds (non-chlorinated)							**2.3067**	**3.0450**

Compiled Gross Beta Results from Pismo RO Concentrate Sampling

RO Feed Water

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
7/17/2018	9:30 AM	Gross Beta	900.0	6.40	±	1.10	2.10	pCi/L
7/17/2018	9:30 AM	K-40	901.1	252	±	228	523	pCi/L
7/17/2018	9:30 AM	Gross Beta Less K-40		-245.6				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
7/19/2018	9:30 AM	Gross Beta	900.0	1.98	±	0.96	1.93	pCi/L
7/19/2018	9:30 AM	K-40	901.1	1902	±	306	599	pCi/L
7/19/2018	9:30 AM	Gross Beta Less K-40		-1900.0				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/1/2018	11:10 AM	Gross Beta	900.0	5.12	±	1.65	3.03	pCi/L
8/1/2018	11:10 AM	K-40	901.1	ND	±	163	399	pCi/L
8/1/2018	11:10 AM	Gross Beta Less K-40		#VALUE!				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/7/2018	9:45 AM	Gross Beta	900.0	22.96	±	1.77	1.87	pCi/L
8/7/2018	9:45 AM	K-40	901.1	ND	±	100	282	pCi/L
8/7/2018	9:45 AM	Gross Beta Less K-40		#VALUE!				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/13/2018	10:20 AM	Gross Beta	900.0	19.18	±	1.70	1.86	pCi/L
8/13/2018	10:20 AM	K-40	901.1	ND	±	89	279	pCi/L
8/13/2018	10:20 AM	Gross Beta Less K-40		#VALUE!				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/28/2018	10:01 AM	Gross Beta	900.0	5.03	±	2.49	5.06	pCi/L
8/28/2018	10:01 AM	K-40	901.1	0.0	±	62	150	pCi/L
8/28/2018	10:01 AM	Gross Beta Less K-40		5.0				

RO Concentrate

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
7/17/2018	10:35 AM	Gross Beta	900.0	26.37	±	3.51	2.20	pCi/L
7/17/2018	10:35 AM	K-40	901.1	1054	±	258	537	pCi/L
7/17/2018	10:35 AM	Gross Beta Less K-40		-1027.6				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
7/27/2018	9:00 AM	Gross Beta	900.0	4.21	±	1.11	2.01	pCi/L
7/27/2018	9:00 AM	K-40	901.1	1148	±	289	605	pCi/L
7/27/2018	9:00 AM	Gross Beta Less K-40		-1143.8				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/1/2018	11:00 AM	Gross Beta	900.0	9.75	±	1.89	3.10	pCi/L
8/1/2018	11:00 AM	K-40	901.1	243	±	770	157	pCi/L
8/1/2018	11:00 AM	Gross Beta Less K-40		-233.3				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/7/2018	10:15 AM	Gross Beta	900.0	101.26	±	7.57	7.76	pCi/L
8/7/2018	10:15 AM	K-40	901.1	614	±	135	279	pCi/L
8/7/2018	10:15 AM	Gross Beta Less K-40		-512.7				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/13/2018	10:00 AM	Gross Beta	900.0	122.69	±	9.83	10.47	pCi/L
8/13/2018	10:00 AM	K-40	901.1	40	±	276	279	pCi/L
8/13/2018	10:00 AM	Gross Beta Less K-40		82.7				

Sample Date	Sample Time	Analyte	Method	Result	±	2 Sigma Error	MDA	Units
8/28/2018	9:45 AM	Gross Beta	900.0	14.25	±	4.36	8.94	pCi/L
8/28/2018	9:45 AM	K-40	901.1	590	±	94	193	pCi/L
8/28/2018	9:45 AM	Gross Beta Less K-40		-575.8				

Compiled TCDD Results from Pismo RO Concentrate Sampling

RO Feed Water 7/19/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	2.37	0.887	4.91	1	2.37
2,3,7,8-penta CDD	4.31	2.56	24.5	0.5	2.155
2,3,7,8-hexa CDDs	8.57	13.1	24.5	0.1	0.857
2,3,7,8-hepta CDD	11.4	5.15	24.5	0.01	0.114
octa CDD	24.9	8.5	49.1	0.001	0.0249
2,3,7,8 tetra CDF	2.91	0.733	4.91	0.1	0.291
1,2,3,7,8 penta CDF	5.03	2.96	24.5	0.05	0.2515
2,3,4,7,8 penta CDF	4.33	5.4	24.5	0.5	2.165
2,3,7,8 hexa CDFs	5.97	4.7	24.5	0.1	0.597
2,3,7,8 hepta CDFs	8.37	5.74	24.5	0.01	0.0837
octa CDF	18.6	11.7	49.1	0.001	0.0186
TEQ Total					**8.9277**

RO Brine 7/19/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	4.35	0.887	5.07	1	4.35
2,3,7,8-penta CDD	5.47	2.56	25.3	0.5	2.735
2,3,7,8-hexa CDDs	8.62	13.1	25.3	0.1	0.862
2,3,7,8-hepta CDD	13.3	5.15	25.3	0.01	0.133
octa CDD	18.5	8.5	50.7	0.001	0.0185
2,3,7,8 tetra CDF	3.42	0.733	5.07	0.1	0.342
1,2,3,7,8 penta CDF	4.5	2.96	25.3	0.05	0.225
2,3,4,7,8 penta CDF	3.14	5.4	25.3	0.5	1.57
2,3,7,8 hexa CDFs	6.63	4.7	25.3	0.1	0.663
2,3,7,8 hepta CDFs	11.2	5.74	25.3	0.01	0.112
octa CDF	21.5	11.7	50.7	0.001	0.0215
TEQ Total					**11.032**

RO Feed Water 7/27/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	4.38	0.887	4.95	1	4.38
2,3,7,8-penta CDD	4.73	2.56	24.8	0.5	2.365
2,3,7,8-hexa CDDs	9.23	13.1	24.8	0.1	0.923
2,3,7,8-hepta CDD	6.33	5.15	24.8	0.01	0.0633
octa CDD	11.1	8.5	49.5	0.001	0.0111
2,3,7,8 tetra CDF	4.65	0.733	4.95	0.1	0.465
1,2,3,7,8 penta CDF	6.41	2.96	24.8	0.05	0.3205
2,3,4,7,8 penta CDF	4.48	5.4	24.8	0.5	2.24
2,3,7,8 hexa CDFs	9.57	4.7	24.8	0.1	0.957
2,3,7,8 hepta CDFs	4.56	5.74	24.8	0.01	0.0456
octa CDF	10.1	11.7	49.5	0.001	0.0101
TEQ Total					**11.7806**

RO Brine 7/27/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	3.81	0.887	5.04	1	3.81
2,3,7,8-penta CDD	6.35	2.56	25.2	0.5	3.175
2,3,7,8-hexa CDDs	6.25	13.1	25.2	0.1	0.625
2,3,7,8-hepta CDD	6.87	5.15	25.2	0.01	0.0687
octa CDD	9.61	8.5	50.4	0.001	0.00961
2,3,7,8 tetra CDF	4.44	0.733	5.04	0.1	0.444
1,2,3,7,8 penta CDF	4.2	2.96	25.2	0.05	0.21
2,3,4,7,8 penta CDF	2.88	5.4	25.2	0.5	1.44
2,3,7,8 hexa CDFs	5.32	4.7	25.2	0.1	0.532
2,3,7,8 hepta CDFs	5.19	5.74	25.2	0.01	0.0519
octa CDF	8.19	11.7	50.4	0.001	0.00819
TEQ Total					**10.3744**

RO Feed Water 8/1/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	0.887	0.887	4.97	1	0.887
2,3,7,8-penta CDD	2.56	2.56	24.9	0.5	1.28
2,3,7,8-hexa CDDs	7.68	13.1	24.9	0.1	0.768
2,3,7,8-hepta CDD	9.31	5.15	24.9	0.01	0.0931
octa CDD	10.6	8.5	49.7	0.001	0.0106
2,3,7,8 tetra CDF	2.81	0.733	4.97	0.1	0.281
1,2,3,7,8 penta CDF	5.95	2.96	24.9	0.05	0.2975
2,3,4,7,8 penta CDF	5.15	5.4	24.9	0.5	2.575
2,3,7,8 hexa CDFs	7.05	4.7	24.9	0.1	0.705
2,3,7,8 hepta CDFs	7.83	5.74	24.9	0.01	0.0783
octa CDF	12.3	11.7	49.7	0.001	0.0123
TEQ Total					**6.9878**

RO Brine 8/1/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	4.55	0.887	5.01	1	4.55
2,3,7,8-penta CDD	5.79	2.56	25	0.5	2.895
2,3,7,8-hexa CDDs	8.62	13.1	25	0.1	0.862
2,3,7,8-hepta CDD	6.53	5.15	25	0.01	0.0653
octa CDD	18	8.5	50.1	0.001	0.018
2,3,7,8 tetra CDF	3.04	0.733	5.01	0.1	0.304
1,2,3,7,8 penta CDF	5.06	2.96	25	0.05	0.253
2,3,4,7,8 penta CDF	4.16	5.4	25	0.5	2.08
2,3,7,8 hexa CDFs	6.05	4.7	25	0.1	0.605
2,3,7,8 hepta CDFs	12	5.74	25	0.01	0.12
octa CDF	20.9	11.7	50.1	0.001	0.0209
TEQ Total					**11.7732**

RO Feed Water 8/7/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	3.74	0.887	4.96	1	3.74
2,3,7,8-penta CDD	7.43	2.56	24.9	0.5	3.715
2,3,7,8-hexa CDDs	13	13.1	24.9	0.1	1.3
2,3,7,8-hepta CDD	8.95	5.15	24.9	0.01	0.0895
octa CDD	13.3	8.5	49.8	0.001	0.0133
2,3,7,8 tetra CDF	4.37	0.733	4.98	0.1	0.437
1,2,3,7,8 penta CDF	7.03	2.96	24.9	0.05	0.3515
2,3,4,7,8 penta CDF	5.66	5.4	24.9	0.5	2.83
2,3,7,8 hexa CDFs	9.4	4.7	24.9	0.1	0.94
2,3,7,8 hepta CDFs	8.87	5.74	24.9	0.01	0.0887
octa CDF	14.5	11.7	49.8	0.001	0.0145
TEQ Total					**13.5195**

RO Brine 8/7/18

Isomer Group	Concentration (pg/L)	MDL	RL	TEF	TEQ (pg/L)
2,3,7,8-tetra CDD	4.91	0.887	4.91	1	4.91
2,3,7,8-penta CDD	24.6	2.56	24.6	0.5	12.3
2,3,7,8-hexa CDDs	10.9	13.1	24.6	0.1	1.09
2,3,7,8-hepta CDD	11.7	5.15	24.6	0.01	0.117
octa CDD	10.7	8.5	49.1	0.001	0.0107
2,3,7,8 tetra CDF	3.56	0.733	4.91	0.1	0.356
1,2,3,7,8 penta CDF	7.29	2.96	24.6	0.05	0.3645
2,3,4,7,8 penta CDF	5.74	5.4	24.6	0.5	2.87
2,3,7,8 hexa CDFs	6.55	4.7	24.6	0.1	0.655
2,3,7,8 hepta CDFs	6.17	5.74	24.6	0.01	0.0617
octa CDF	10.4	11.7	49.1	0.001	0.0104
TEQ Total					**22.7453**

Compiled TCDD Results from Pismo RO Concentrate Sampling

RO Feed Water 8/13/18					
Isomer Group	**Concentration (pg/L)**	**MDL**	**RL**	**TEF**	**TEQ (pg/L)**
2,3,7,8-tetra CDD	4.32	0.887	4.91	1	4.32
2,3,7,8-penta CDD	7.12	2.56	24.6	0.5	3.56
2,3,7,8-hexa CDDs	9.93	13.1	24.6	0.1	0.993
2,3,7,8-hepta CDD	6.46	5.15	24.6	0.01	0.0646
octa CDD	12.5	8.5	49.1	0.001	0.0125
2,3,7,8 tetra CDF	2.03	0.733	4.91	0.1	0.203
1,2,3,7,8 penta CDF	5.4	2.96	24.6	0.05	0.27
2,3,4,7,8 penta CDF	5.14	5.4	24.6	0.5	2.57
2,3,7,8 hexa CDFs	7.08	4.7	24.6	0.1	0.708
2,3,7,8 hepta CDFs	8.58	5.74	24.6	0.01	0.0858
octa CDF	14	11.7	49.1	0.001	0.014
TEQ Total					**12.8009**

RO Brine 8/13/18					
Isomer Group	**Concentration (pg/L)**	**MDL**	**RL**	**TEF**	**TEQ (pg/L)**
2,3,7,8-tetra CDD	4.45	0.887	5.2	1	4.45
2,3,7,8-penta CDD	6.36	2.56	26	0.5	3.18
2,3,7,8-hexa CDDs	15.5	13.1	26	0.1	1.55
2,3,7,8-hepta CDD	12.3	5.15	26	0.01	0.123
octa CDD	32.7	8.5	52	0.001	0.0327
2,3,7,8 tetra CDF	4.29	0.733	5.2	0.1	0.429
1,2,3,7,8 penta CDF	7.12	2.96	26	0.05	0.356
2,3,4,7,8 penta CDF	5.85	5.4	26	0.5	2.925
2,3,7,8 hexa CDFs	13.5	4.7	26	0.1	1.35
2,3,7,8 hepta CDFs	16.2	5.74	26	0.01	0.162
octa CDF	23.9	11.7	52	0.001	0.0239
TEQ Total					**14.5816**

RO Feed Water 8/28/18					
Isomer Group	**Concentration (pg/L)**	**MDL**	**RL**	**TEF**	**TEQ (pg/L)**
2,3,7,8-tetra CDD	3.38	0.887	4.89	1	3.38
2,3,7,8-penta CDD	6.24	2.56	24.4	0.5	3.12
2,3,7,8-hexa CDDs	4.5	13.1	24.4	0.1	0.45
2,3,7,8-hepta CDD	11.4	5.15	24.4	0.01	0.114
octa CDD	15.2	8.5	48	0.001	0.0152
2,3,7,8 tetra CDF	2.99	0.733	4.89	0.1	0.299
1,2,3,7,8 penta CDF	3.82	2.96	24.4	0.05	0.191
2,3,4,7,8 penta CDF	2.96	5.4	24.4	0.5	1.48
2,3,7,8 hexa CDFs	5.54	4.7	24.4	0.1	0.554
2,3,7,8 hepta CDFs	7.48	5.74	24.4	0.01	0.0748
octa CDF	12.2	11.7	48.9	0.001	0.0122
TEQ Total					**9.6902**

RO Brine 8/28/18					
Isomer Group	**Concentration (pg/L)**	**MDL**	**RL**	**TEF**	**TEQ (pg/L)**
2,3,7,8-tetra CDD	4.2	0.887	4.89	1	4.2
2,3,7,8-penta CDD	2.98	2.56	24.4	0.5	1.49
2,3,7,8-hexa CDDs	0.59	13.1	24.4	0.1	0.059
2,3,7,8-hepta CDD	4.96	5.15	24.4	0.01	0.0496
octa CDD	14.1	8.5	48	0.001	0.0141
2,3,7,8 tetra CDF	3.14	0.733	4.89	0.1	0.314
1,2,3,7,8 penta CDF	2.73	2.96	24.4	0.05	0.1365
2,3,4,7,8 penta CDF	2.31	5.4	24.4	0.5	1.155
2,3,7,8 hexa CDFs	3.4	4.7	24.4	0.1	0.34
2,3,7,8 hepta CDFs	4.96	5.74	24.4	0.01	0.0496
octa CDF	12.9	11.7	48.9	0.001	0.0129
TEQ Total					**7.8207**

average	10.6
maximum	13.5

average	13.1
maximum	22.7

Abalone Coast Analytical, Inc.
141 Suburban Road, Suite C-1 San Luis Obispo CA, 93401
Phone: 595-1080 Fax: 595-1080

Order #: 18-4621
Date/Time Rec'd:7/19/18 1109

City of Pismo Beach
760 Mattie Road
Pismo Beach, CA 93449

Contact: Russ Fleming
Phone: 805-773-7075
Sampler: Hailie Hix

Project: **R/O Brine Analysis**

Sample #	Sample Description	Date / Time	Analysis	Method	Result	Units	MDL	RL	Completed
-1	**R/O Brine**	**7/19/18 1035**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**07/24/18**
			Suspended Solids	SM 2540 D.	**1.6 DNQ**	mg/L	1	2.	**07/23/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**1.92**	ppm	0.01	0.02	**07/19/18**
-2	**R/O Feed Water**	**7/19/18 0945**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**07/24/18**
			Suspended Solids	SM 2540 D.	**ND.**	mg/L	1	2.	**07/23/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**3.3**	ppm	0.01	0.02	**07/19/18**

* EPA Method Update Rule (4/11/07) mandates 15 minute hold time.

****OHT**

Report Completion Date: **7/25/18**

Reviewed By: Erika Frost

Erika Frost, Lab Director
State of California CDPH ELAP 2661

Qualifier Codes/Definitions:

OHT -Out of Hold Time

Definitions:

MPN = Most Probable Number
mg/L = milligrams per liter (ppm)
ppm = parts per million
MDL = Method Detection Limit
RL = Reporting Limit
ND = Analyte NOT DETECTED at or above MDL
DNQ = Detected, not quantified. This applies to trace values where analytes are detected between the MDL and the RL. This result is

estimated or qualitative due to matrix background noise or values falling below the lowest point of a calibration curve.
Est = Estimated (est) results are due to the sample dilutions being too high where the change in dissolved oxygen is such that it cannot be accurately quantified. Actual BOD may be slighly higher than indicated.

Abalone Coast Analytical, Inc.
141 Suburban Road, Suite C-1 San Luis Obispo CA, 93401
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Order #: 18-4803
Date/Time Rec'd: 7/27/18 1232

City of Pismo Beach
760 Mattie Road
Pismo Beach, CA 93449

Contact: Russ Fleming
Phone: 805-773-7075
Sampler: Hailie Hix

Project: **R/O Brine Analysis**

Sample #	Sample Description	Date / Time	Analysis	Method	Result	Units	MDL	RL	Completed
-1	**R/O Brine**	**7/27/18 0900**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**08/01/18**
			Suspended Solids	SM 2540 D.	**1.2 DNQ**	mg/L	1	2.	**07/31/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**0.93**	ppm	0.01	0.02	**07/27/18**
-2	**R/O Feed Water**	**7/27/18 0835**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**08/01/18**
			Suspended Solids	SM 2540 D.	**ND.**	mg/L	1	2.	**07/31/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**1.66**	ppm	0.01	0.02	**07/27/18**

* EPA Method Update Rule (4/11/07) mandates 15 minute hold time.

****OHT**

Report Completion Date: **8/3/18**

Reviewed By: Erika Frost

Erika Frost, Lab Director
State of California CDPH ELAP 2661

Qualifier Codes/Definitions:

OHT -Out of Hold Time

Definitions:

MPN = Most Probable Number
mg/L = milligrams per liter (ppm)
ppm = parts per million
MDL = Method Detection Limit
RL = Reporting Limit
ND = Analyte NOT DETECTED at or above MDL
DNQ = Detected, not quantified. This applies to trace values where analytes are detected between the MDL and the RL. This result is

estimated or qualitative due to matrix background noise or values falling below the lowest point of a calibration curve.
Est = Estimated (est) results are due to the sample dilutions being too high where the change in dissolved oxygen is such that it cannot be accurately quantified. Actual BOD may be slighly higher than indicated.

Abalone Coast Analytical, Inc.
141 Suburban Road, Suite C-1 San Luis Obispo CA, 93401
Phone: 595-1080 Fax: 595-1080

Order #: 18-4876
Date/Time Rec'd: 8/1/18 1140

City of Pismo Beach
760 Mattie Road
Pismo Beach, CA 93449

Contact: Russ Fleming
Phone: 805-773-7075
Sampler: Hailie Hix

Project: **R/O Brine Analysis**

Sample #	Sample Description	Date / Time	Analysis	Method	Result	Units	MDL	RL	Completed
-1	**R/O Brine**	**8/1/18 1100**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**08/06/18**
			Suspended Solids	SM 2540 D.	**ND.**	mg/L	1	2.	**08/02/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**1.8**	ppm	0.01	0.02	**08/01/18**
-2	**R/O Feed Water**	**8/1/18 1110**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**08/06/18**
			Suspended Solids	SM 2540 D.	**1.8 DNQ**	mg/L	1	2.	**08/02/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**1.12**	ppm	0.01	0.02	**08/01/18**

* EPA Method Update Rule (4/11/07) mandates 15 minute hold time.

****OHT**

Report Completion Date: **8/7/18**

Reviewed By: Erika Frost

Erika Frost, Lab Director
State of California CDPH ELAP 2661

Qualifier Codes/Definitions:

OHT -Out of Hold Time

Definitions:

MPN = Most Probable Number
mg/L = milligrams per liter (ppm)
ppm = parts per million
MDL = Method Detection Limit
RL = Reporting Limit
ND = Analyte NOT DETECTED at or above MDL
DNQ = Detected, not quantified. This applies to trace values where analytes are detected between the MDL and the RL. This result is

estimated or qualitative due to matrix background noise or values falling below the lowest point of a calibration curve.
Est = Estimated (est) results are due to the sample dilutions being too high where the change in dissolved oxygen is such that it cannot be accurately quantified. Actual BOD may be slighly higher than indicated.

Abalone Coast Analytical, Inc.
141 Suburban Road, Suite C-1 San Luis Obispo CA, 93401
Phone: 595-1080 Fax: 595-1080

Order #: 18-5022
Date/Time Rec'd: 8/7/18 1111

City of Pismo Beach
760 Mattie Road
Pismo Beach, CA 93449

Contact: Russ Fleming
Phone: 805-773-7075
Sampler: Hailie Hix

Project: **R/O Brine Analysis**

Sample #	Sample Description	Date / Time	Analysis	Method	Result	Units	MDL	RL	Completed
-1	**R/O Brine**	**8/7/18 1015**	5-day BOD	SM 5210 B.	**2.33 DNQ**	mg/L	2.29	3	**08/12/18**
			Suspended Solids	SM 2540 D.	**1.6 DNQ.**	mg/L	1	2.	**08/09/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**2.06**	ppm	0.01	0.02	**08/07/18**
-2	**R/O Feed Water**	**8/7/18 0945**	5-day BOD	SM 5210 B.	**ND.**	mg/L	2.29	3	**08/12/18**
			Suspended Solids	SM 2540 D.	**ND.**	mg/L	1	2.	**08/09/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**2.38**	ppm	0.01	0.02	**08/07/18**

***15 minute hold time**
****OHT**

Report Completion Date: **8/13/18**

Reviewed By: Sean Rogers

Sean Rogers, Lab Director
State of California CDPH ELAP 2661

Qualifier Codes/Definitions:

OHT -Out of Hold Time

Definitions:
MPN = Most Probable Number
mg/L = milligrams per liter (ppm)
ppm = parts per million
MDL = Method Detection Limit
RL = Reporting Limit
ND = Analyte NOT DETECTED at or above MDL
DNQ = Detected, not quantified. This applies to trace values where analytes are detected between the MDL and the RL. This result is estimated or qualitative due to matrix background noise or values falling below the lowest point of a calibration curve.

Est = Estimated (est) results are due to the sample dilutions being too high where the change in dissolved oxygen is such that it cannot be accurately quantified. Actual BOD may be slighly higher than indicated.

Abalone Coast Analytical, Inc.
141 Suburban Road, Suite C-1 San Luis Obispo CA, 93401
Phone: 595-1080 Fax: 595-1080

Order #: 18-5470
Date/Time Rec'd: 8/28/18 1224

City of Pismo Beach
760 Mattie Road
Pismo Beach, CA 93449

Contact: Russ Fleming
Phone: 805-773-7075
Sampler: Lauren Herrick

Project: **R/O Brine Analysis**

Sample #	Sample Description	Date / Time	Analysis	Method	Result	Units	MDL	RL	Completed
-1	**R/O Brine**	**8/28/18 0945**	5-day BOD	SM 5210 B.	**4.**	mg/L	2.29	3	**09/03/18**
			Suspended Solids	SM 2540 D.	**12.**	mg/L	1	2.	**08/30/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**0.99**	ppm	0.01	0.02	**08/28/18**
-2	**R/O Feed Water**	**8/28/18 1001**	5-day BOD	SM 5210 B.	**2.76 DNQ**	mg/L	2.29	3	**09/03/18**
			Suspended Solids	SM 2540 D.	**ND.**	mg/L	1	2.	**08/30/18**
			Total Residual Chlorine*	SM 4500 Cl-G**	**1.44**	ppm	0.01	0.02	**08/28/18**

* EPA Method Update Rule (4/11/07) mandates 15 minute hold time.

****OHT**

Report Completion Date: **9/4/18**

Reviewed By: Erika Frost

Erika Frost, Lab Director
State of California CDPH ELAP 2661

Qualifier Codes/Definitions:

OHT -Out of Hold Time

Definitions:

MPN = Most Probable Number
mg/L = milligrams per liter (ppm)
ppm = parts per million
MDL = Method Detection Limit
RL = Reporting Limit
ND = Analyte NOT DETECTED at or above MDL
DNQ = Detected, not quantified. This applies to trace values where analytes are detected between the MDL and the RL. This result is

estimated or qualitative due to matrix background noise or values falling below the lowest point of a calibration curve.
Est = Estimated (est) results are due to the sample dilutions being too high where the change in dissolved oxygen is such that it cannot be accurately quantified. Actual BOD may be slighly higher than indicated.

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8G2848
8/14/2018
Invoice: A823507

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8G2848 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 7/20/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Michelle Kawaguchi

Michelle Kawaguchi, Project Manager

NELAP ACCREDITED TNI LABORATORY

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-4621 City of Pismo Beach	**Project PO#:**	-
Received:	7/20/2018 - 11:30		
Report Due:	8/14/2018		

Sample Receipt Conditions

Cooler: Cooler #2
Temperature on Receipt ºC: 5.0

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Cooler: Default Cooler
Temperature on Receipt ºC: 6.0

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
B2.2	Analyte detected in associated method blank below the reporting limit. Sample result may be attributable to ambient laboratory background.
BS	Blank spike recoveries did not meet acceptance limits.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
CV0.0	CCV recovery was above method acceptance limits; no material impact on reported result as sample is ND for this parameter.
J	Estimated value
MS.x	Matrix spike recovery exceeds lower control limit. Sample result may be biased low.
MS1.0	Matrix spike recoveries exceed control limits.
MS1.3	Matrix spike recovery data unavailable or unreliable due to significant dilution required for matrix interferences.
MS1.5	Matrix spike recovery exceeds upper control limit. No material impact as sample results are Non-Detected.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/19/18 - 10:35
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**10**		0.10	ug/L	1	A810715	07/26/18	08/01/18	
Copper	EPA 200.8 DRC	**15**		1.1	ug/L	1	A810715	07/26/18	07/31/18	
Nickel	EPA 200.8 DRC	**20**		1.0	ug/L	1	A810715	07/26/18	07/31/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.014	0.10	ug/L	20	A810614	07/25/18	07/30/18	
4,4'-DDE	EPA 608	ND	0.012	0.10	ug/L	20	A810614	07/25/18	07/30/18	
4,4'-DDT	EPA 608	ND	0.014	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Aldrin	EPA 608	ND	0.016	0.10	ug/L	20	A810614	07/25/18	07/30/18	
alpha-BHC	EPA 608	ND	0.050	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1016	EPA 608	ND	1.0	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1221	EPA 608	ND	1.3	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1232	EPA 608	ND	1.0	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1242	EPA 608	ND	1.0	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1248	EPA 608	ND	0.40	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1254	EPA 608	ND	1.0	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Aroclor-1260	EPA 608	ND	0.30	2.0	ug/L	20	A810614	07/25/18	07/30/18	
beta-BHC	EPA 608	ND	0.011	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Chlordane	EPA 608	ND	0.52	2.0	ug/L	20	A810614	07/25/18	07/30/18	
delta-BHC	EPA 608	ND	0.012	0.10	ug/L	20	A810614	07/25/18	07/30/18	CV0.0
Dieldrin	EPA 608	ND	0.019	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Endosulfan I	EPA 608	ND	0.018	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Endosulfan II	EPA 608	ND	0.036	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Endosulfan Sulfate	EPA 608	ND	0.015	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Endrin	EPA 608	ND	0.016	0.10	ug/L	20	A810614	07/25/18	07/30/18	CV0.0
Endrin Aldehyde	EPA 608	ND	0.013	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Heptachlor	EPA 608	ND	0.014	0.10	ug/L	20	A810614	07/25/18	07/30/18	CV0.0
Heptachlor Epoxide	EPA 608	ND	0.014	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Lindane	EPA 608	ND	0.050	0.10	ug/L	20	A810614	07/25/18	07/30/18	
Toxaphene	EPA 608	ND	0.70	2.0	ug/L	20	A810614	07/25/18	07/30/18	
Surrogate: TCMX	EPA 608	80 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	**1.5**		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	CV0.0
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/19/18 - 10:35
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
2-Butanone	EPA 624	**1.3**	1.2	20	ug/L	1	A810792	07/26/18	07/26/18	J
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A810792	07/26/18	07/26/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A810792	07/26/18	07/26/18	
Acetone	EPA 624	**8.1**	1.4	20	ug/L	1	A810792	07/26/18	07/26/18	B2.2, J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Bromodichloromethane	EPA 624	**1.6**	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A810792	07/26/18	07/26/18	CV0.0
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A810792	07/26/18	07/26/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Chloromethane	EPA 624	**0.49**	0.18	0.50	ug/L	1	A810792	07/26/18	07/26/18	J
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Dibromochloromethane	EPA 624	**0.23**	0.085	0.50	ug/L	1	A810792	07/26/18	07/26/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A810792	07/26/18	07/26/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Ethylbenzene	EPA 624	**0.22**	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	J
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A810792	07/26/18	07/26/18	
m,p-Xylenes	EPA 624	**0.91**	0.22	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A810792	07/26/18	07/26/18	
o-Xylene	EPA 624	**0.57**	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A810792	07/26/18	07/26/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Toluene	EPA 624	**0.54**	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	103 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	99 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	97 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.70	10	ug/L	5	A810615	07/25/18	08/01/18	
2,4-Dichlorophenol	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/19/18 - 10:35
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dimethylphenol	EPA 625	ND	0.76	2.5	ug/L	5	A810615	07/25/18	08/01/18	
2,4-Dinitrophenol	EPA 625	ND	1.4	5.0	ug/L	5	A810615	07/25/18	08/01/18	MS1.5
2,4-Dinitrotoluene	EPA 625	ND	0.50	5.0	ug/L	5	A810615	07/25/18	08/01/18	
2,6-Dinitrotoluene	EPA 625	ND	1.8	5.0	ug/L	5	A810615	07/25/18	08/01/18	
2-Chloronaphthalene	EPA 625	ND	0.50	10	ug/L	5	A810615	07/25/18	08/01/18	
2-Chlorophenol	EPA 625	ND	0.56	2.5	ug/L	5	A810615	07/25/18	08/01/18	
2-Nitrophenol	EPA 625	ND	1.1	10	ug/L	5	A810615	07/25/18	08/01/18	
3,3-Dichlorobenzidine	EPA 625	ND	2.7	10	ug/L	5	A810615	07/25/18	08/01/18	MS.x
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.0	ug/L	5	A810615	07/25/18	08/01/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.0	ug/L	5	A810615	07/25/18	08/01/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	1.2	5.0	ug/L	5	A810615	07/25/18	08/01/18	
4-Nitrophenol	EPA 625	ND	1.3	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Acenaphthene	EPA 625	ND	0.020	0.50	ug/L	5	A810615	07/25/18	08/01/18	
Acenaphthylene	EPA 625	ND	0.011	0.20	ug/L	5	A810615	07/25/18	08/01/18	
Anthracene	EPA 625	ND	0.0098	2.0	ug/L	5	A810615	07/25/18	08/01/18	
Benzidine	EPA 625	ND	7.0	25	ug/L	5	A810615	07/25/18	08/01/18	BS2.0, MS.x
Benzo(a)anthracene	EPA 625	ND	0.011	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Benzo(a)pyrene	EPA 625	ND	0.016	2.0	ug/L	5	A810615	07/25/18	08/01/18	
Benzo(b)fluoranthene	EPA 625	ND	0.010	10	ug/L	5	A810615	07/25/18	08/01/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.019	0.10	ug/L	5	A810615	07/25/18	08/01/18	
Benzo(k)fluoranthene	EPA 625	ND	0.014	2.0	ug/L	5	A810615	07/25/18	08/01/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.5	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Butyl benzyl phthalate	EPA 625	ND	0.50	10	ug/L	5	A810615	07/25/18	08/01/18	
Chrysene	EPA 625	ND	0.0057	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.016	0.10	ug/L	5	A810615	07/25/18	08/01/18	
Diethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Dimethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Di-n-butyl phthalate	EPA 625	ND	0.68	10	ug/L	5	A810615	07/25/18	08/01/18	
Di-n-octyl phthalate	EPA 625	ND	0.53	10	ug/L	5	A810615	07/25/18	08/01/18	
Fluoranthene	EPA 625	ND	0.0061	0.050	ug/L	5	A810615	07/25/18	08/01/18	
Fluorene	EPA 625	ND	0.022	0.10	ug/L	5	A810615	07/25/18	08/01/18	
Hexachlorobenzene	EPA 625	ND	0.76	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Hexachlorobutadiene	EPA 625	ND	0.67	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.013	0.050	ug/L	5	A810615	07/25/18	08/01/18	
Isophorone	EPA 625	ND	0.57	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Naphthalene	EPA 625	**0.44**	0.014	0.20	ug/L	5	A810615	07/25/18	08/01/18	
Nitrobenzene	EPA 625	ND	0.53	2.5	ug/L	5	A810615	07/25/18	08/01/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.4	5.0	ug/L	5	A810615	07/25/18	08/01/18	
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.0	ug/L	5	A810615	07/25/18	08/01/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/19/18 - 10:35
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.2	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Pentachlorophenol	EPA 625	ND	1.0	5.0	ug/L	5	A810615	07/25/18	08/01/18	
Phenanthrene	EPA 625	ND	0.012	0.050	ug/L	5	A810615	07/25/18	08/01/18	MS1.5
Phenol	EPA 625	ND	0.50	2.5	ug/L	5	A810615	07/25/18	08/01/18	
Pyrene	EPA 625	ND	0.0072	0.050	ug/L	5	A810615	07/25/18	08/01/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	135 %		*Acceptable range: 53-200 %*						
Surrogate: 2-Fluorobiphenyl	EPA 625	93 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	84 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	97 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	93 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	82 %		*Acceptable range: 39-135 %*						

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-01RE1
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/19/18 - 10:35
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
Chloroform	EPA 624	**5.0**	0.10	0.50	ug/L	1	A810869	07/27/18	07/28/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	100 %		*Acceptable range:*		*70-130 %*				
Surrogate: Bromofluorobenzene	EPA 624	101 %		*Acceptable range:*		*70-130 %*				
Surrogate: Toluene-d8	EPA 624	98 %		*Acceptable range:*		*70-130 %*				

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/19/18 - 09:30
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**2.2**		0.10	ug/L	1	A810715	07/26/18	08/01/18	
Copper	EPA 200.8 DRC	**4.4**		1.1	ug/L	1	A810715	07/26/18	07/31/18	
Nickel	EPA 200.8 DRC	**5.3**		1.0	ug/L	1	A810715	07/26/18	07/31/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A810614	07/25/18	07/30/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A810614	07/25/18	07/30/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A810614	07/25/18	07/30/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A810614	07/25/18	07/30/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A810614	07/25/18	07/30/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A810614	07/25/18	07/30/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A810614	07/25/18	07/30/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A810614	07/25/18	07/30/18	CV0.0
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A810614	07/25/18	07/30/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A810614	07/25/18	07/30/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A810614	07/25/18	07/30/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A810614	07/25/18	07/30/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A810614	07/25/18	07/30/18	CV0.0
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A810614	07/25/18	07/30/18	
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A810614	07/25/18	07/30/18	CV0.0
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A810614	07/25/18	07/30/18	
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A810614	07/25/18	07/30/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A810614	07/25/18	07/30/18	
Surrogate: TCMX	EPA 608	79 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	CV0.0
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8G2848-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/19/18 - 09:30
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A810792	07/26/18	07/26/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A810792	07/26/18	07/26/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A810792	07/26/18	07/26/18	
Acetone	EPA 624	**1.6**	1.4	20	ug/L	1	A810792	07/26/18	07/26/18	B2.2, J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Bromodichloromethane	EPA 624	**0.65**	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A810792	07/26/18	07/26/18	CV0.0
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A810792	07/26/18	07/26/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Chloromethane	EPA 624	**0.74**	0.18	0.50	ug/L	1	A810792	07/26/18	07/26/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A810792	07/26/18	07/26/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Dibromochloromethane	EPA 624	ND	0.085	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A810792	07/26/18	07/26/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Ethylbenzene	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A810792	07/26/18	07/26/18	
m,p-Xylenes	EPA 624	ND	0.22	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A810792	07/26/18	07/26/18	
o-Xylene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A810792	07/26/18	07/26/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Toluene	EPA 624	**0.49**	0.14	0.50	ug/L	1	A810792	07/26/18	07/26/18	J
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A810792	07/26/18	07/26/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	105 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	102 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	94 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A810615	07/25/18	08/01/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A810615	07/25/18	08/01/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A810615	07/25/18	08/01/18	
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A810615	07/25/18	08/01/18	

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Certificate of Analysis

Sample ID: A8G2848-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/19/18 - 09:30
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A810615	07/25/18	08/01/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A810615	07/25/18	08/01/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A810615	07/25/18	08/01/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A810615	07/25/18	08/01/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A810615	07/25/18	08/01/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A810615	07/25/18	08/01/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A810615	07/25/18	08/01/18	
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A810615	07/25/18	08/01/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A810615	07/25/18	08/01/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A810615	07/25/18	08/01/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A810615	07/25/18	08/01/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A810615	07/25/18	08/01/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A810615	07/25/18	08/01/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A810615	07/25/18	08/01/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A810615	07/25/18	08/01/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A810615	07/25/18	08/01/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A810615	07/25/18	08/01/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A810615	07/25/18	08/01/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A810615	07/25/18	08/01/18	
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A810615	07/25/18	08/01/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A810615	07/25/18	08/01/18	
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A810615	07/25/18	08/01/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A810615	07/25/18	08/01/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A810615	07/25/18	08/01/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A810615	07/25/18	08/01/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A810615	07/25/18	08/01/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A810615	07/25/18	08/01/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A810615	07/25/18	08/01/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A810615	07/25/18	08/01/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A810615	07/25/18	08/01/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A810615	07/25/18	08/01/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A810615	07/25/18	08/01/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A810615	07/25/18	08/01/18	
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A810615	07/25/18	08/01/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A810615	07/25/18	08/01/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A810615	07/25/18	08/01/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Naphthalene	EPA 625	**0.12**	0.0027	0.20	ug/L	1	A810615	07/25/18	08/01/18	J
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A810615	07/25/18	08/01/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A810615	07/25/18	08/01/18	
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A810615	07/25/18	08/01/18	

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Certificate of Analysis

Sample ID: A8G2848-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/19/18 - 09:30
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A810615	07/25/18	08/01/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A810615	07/25/18	08/01/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A810615	07/25/18	08/01/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	174 %		*Acceptable range: 53-200 %*						
Surrogate: 2-Fluorobiphenyl	EPA 625	83 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	86 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	89 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	92 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	94 %		*Acceptable range: 39-135 %*						

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Certificate of Analysis

Sample ID: A8G2848-02RE1
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/19/18 - 09:30
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
Chloroform	EPA 624	**2.2**	0.10	0.50	ug/L	1	A810869	07/27/18	07/28/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	101 %		*Acceptable range:*		*70-130 %*				
Surrogate: Bromofluorobenzene	EPA 624	100 %		*Acceptable range:*		*70-130 %*				
Surrogate: Toluene-d8	EPA 624	97 %		*Acceptable range:*		*70-130 %*				

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Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A810715											Prepared: 7/26/2018	
Prep Method: EPA 200.2 DRC											Analyst: PSK	
Blank (A810715-BLK1)												
Copper	ND		1.1	ug/L							07/31/18	
Nickel	ND		1.0	ug/L							07/31/18	
Blank (A810715-BLK2)												
Arsenic	ND		0.10	ug/L							08/01/18	
Blank Spike (A810715-BS1)												
Copper	49		1.1	ug/L	50		98	85-115			07/31/18	
Nickel	50		1.0	ug/L	50		101	85-115			07/31/18	
Blank Spike (A810715-BS2)												
Arsenic	47		0.10	ug/L	50		93	85-115			08/01/18	
Blank Spike Dup (A810715-BSD1)												
Copper	48		1.1	ug/L	50		97	85-115	2	20	07/31/18	
Nickel	49		1.0	ug/L	50		99	85-115	2	20	07/31/18	
Blank Spike Dup (A810715-BSD2)												
Arsenic	46		0.10	ug/L	50		91	85-115	2	20	08/01/18	
Matrix Spike (A810715-MS1), Source: A8G3046-01												
Copper	57		11	ug/L	50	14	86	70-130			07/31/18	
Nickel	81		10	ug/L	50	34	94	70-130			07/31/18	
Matrix Spike (A810715-MS2), Source: A8G3046-01												
Arsenic	57		1.0	ug/L	50	6.2	101	70-130			08/01/18	
Matrix Spike Dup (A810715-MSD1), Source: A8G3046-01												
Copper	57		11	ug/L	50	14	87	70-130	1	20	07/31/18	
Nickel	82		10	ug/L	50	34	95	70-130	1	20	07/31/18	
Matrix Spike Dup (A810715-MSD2), Source: A8G3046-01												
Arsenic	57		1.0	ug/L	50	6.2	102	70-130	1	20	08/01/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A810614											Prepared: 7/25/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank (A810614-BLK1)												
4,4'-DDD	ND	0.00072	0.050	ug/L							07/30/18	
4,4'-DDE	ND	0.00061	0.050	ug/L							07/30/18	
4,4'-DDT	ND	0.00070	0.010	ug/L							07/30/18	
Aldrin	ND	0.00079	0.0050	ug/L							07/30/18	
alpha-BHC	ND	0.0025	0.010	ug/L							07/30/18	
Aroclor-1016	ND	0.050	0.50	ug/L							07/30/18	
Aroclor-1221	ND	0.063	0.50	ug/L							07/30/18	
Aroclor-1232	ND	0.050	0.50	ug/L							07/30/18	
Aroclor-1242	ND	0.050	0.50	ug/L							07/30/18	
Aroclor-1248	ND	0.020	0.50	ug/L							07/30/18	
Aroclor-1254	ND	0.050	0.50	ug/L							07/30/18	
Aroclor-1260	ND	0.015	0.50	ug/L							07/30/18	
beta-BHC	ND	0.00054	0.0050	ug/L							07/30/18	
Chlordane	ND	0.026	0.10	ug/L							07/30/18	
delta-BHC	ND	0.00060	0.0050	ug/L							07/30/18	
Dieldrin	ND	0.00097	0.010	ug/L							07/30/18	
Endosulfan I	ND	0.00089	0.020	ug/L							07/30/18	
Endosulfan II	ND	0.0018	0.010	ug/L							07/30/18	
Endosulfan Sulfate	ND	0.00074	0.050	ug/L							07/30/18	
Endrin	ND	0.00081	0.010	ug/L							07/30/18	
Endrin Aldehyde	ND	0.00067	0.010	ug/L							07/30/18	
Heptachlor	ND	0.00069	0.010	ug/L							07/30/18	
Heptachlor Epoxide	ND	0.00069	0.010	ug/L							07/30/18	
Lindane	ND	0.0025	0.020	ug/L							07/30/18	
Toxaphene	ND	0.035	0.50	ug/L							07/30/18	
Surrogate: TCMX	*0.24*				*0.30*		*79*	*26-144*			07/30/18	
Blank Spike (A810614-BS1)												
4,4'-DDD	0.041	0.00072	0.050	ug/L	0.040		102	63-146			07/30/18	J
4,4'-DDE	0.040	0.00061	0.050	ug/L	0.040		101	49-150			07/30/18	J
4,4'-DDT	0.040	0.00070	0.010	ug/L	0.040		99	66-146			07/30/18	
Aldrin	0.038	0.00079	0.0050	ug/L	0.040		94	24-144			07/30/18	
alpha-BHC	0.038	0.0025	0.010	ug/L	0.040		94	32-176			07/30/18	
beta-BHC	0.037	0.00054	0.0050	ug/L	0.040		93	59-152			07/30/18	
delta-BHC	0.040	0.00060	0.0050	ug/L	0.040		100	46-156			07/30/18	
Dieldrin	0.039	0.00097	0.010	ug/L	0.040		97	62-146			07/30/18	
Endosulfan I	0.041	0.00089	0.020	ug/L	0.040		102	53-151			07/30/18	
Endosulfan II	0.039	0.0018	0.010	ug/L	0.040		99	63-144			07/30/18	
Endosulfan Sulfate	0.040	0.00074	0.050	ug/L	0.040		100	65-145			07/30/18	J
Endrin	0.044	0.00081	0.010	ug/L	0.040		109	55-153			07/30/18	
Endrin Aldehyde	0.034	0.00067	0.010	ug/L	0.040		85	68-128			07/30/18	
Heptachlor	0.042	0.00069	0.010	ug/L	0.040		105	34-147			07/30/18	
Heptachlor Epoxide	0.039	0.00069	0.010	ug/L	0.040		97	57-150			07/30/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A810614											Prepared: 7/25/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank Spike (A810614-BS1)												
Lindane	0.038	0.0025	0.020	ug/L	0.040		95	58-148			07/30/18	
Surrogate: TCMX	*0.25*				*0.30*		*83*	*26-144*			07/30/18	
Blank Spike Dup (A810614-BSD1)												
4,4'-DDD	0.039	0.00072	0.050	ug/L	0.040		97	63-146	4	20	07/30/18	J
4,4'-DDE	0.038	0.00061	0.050	ug/L	0.040		96	49-150	5	20	07/30/18	J
4,4'-DDT	0.039	0.00070	0.010	ug/L	0.040		98	66-146	1	20	07/30/18	
Aldrin	0.037	0.00079	0.0050	ug/L	0.040		92	24-144	2	20	07/30/18	
beta-BHC	0.037	0.00054	0.0050	ug/L	0.040		93	59-152	0	20	07/30/18	
delta-BHC	0.040	0.00060	0.0050	ug/L	0.040		101	46-156	2	20	07/30/18	
Dieldrin	0.039	0.00097	0.010	ug/L	0.040		97	62-146	1	20	07/30/18	
Endosulfan I	0.041	0.00089	0.020	ug/L	0.040		102	53-151	0	20	07/30/18	
Endosulfan II	0.041	0.0018	0.010	ug/L	0.040		102	63-144	4	20	07/30/18	
Endosulfan Sulfate	0.040	0.00074	0.050	ug/L	0.040		99	65-145	0	20	07/30/18	J
Endrin	0.041	0.00081	0.010	ug/L	0.040		104	55-153	5	20	07/30/18	
Endrin Aldehyde	0.034	0.00067	0.010	ug/L	0.040		84	68-128	2	20	07/30/18	
Heptachlor	0.043	0.00069	0.010	ug/L	0.040		107	34-147	2	20	07/30/18	
Heptachlor Epoxide	0.039	0.00069	0.010	ug/L	0.040		98	57-150	1	20	07/30/18	
Lindane	0.039	0.0025	0.020	ug/L	0.040		97	58-148	2	20	07/30/18	
Surrogate: TCMX	*0.25*				*0.30*		*84*	*26-144*			07/30/18	
Matrix Spike (A810614-MS1), Source: A8G2848-01												
4,4'-DDD	ND	0.014	0.10	ug/L	0.038	ND	0	63-146			07/30/18	MS1.3 ***Low***
4,4'-DDE	0.028	0.012	0.10	ug/L	0.038	ND	72	49-150			07/30/18	J
4,4'-DDT	0.032	0.014	0.10	ug/L	0.038	ND	83	66-146			07/30/18	J
Aldrin	0.060	0.016	0.10	ug/L	0.038	ND	158	24-144			07/30/18	MS1.3 ***High*** , J
alpha-BHC	ND	0.050	0.10	ug/L	0.038	ND	0	32-176			07/30/18	MS1.3 ***Low***
beta-BHC	0.046	0.011	0.10	ug/L	0.038	ND	121	59-152			07/30/18	J
delta-BHC	0.038	0.012	0.10	ug/L	0.038	ND	98	46-156			07/30/18	J
Dieldrin	0.025	0.019	0.10	ug/L	0.038	ND	66	62-146			07/30/18	J
Endosulfan I	ND	0.018	0.10	ug/L	0.038	ND	0	53-151			07/30/18	MS1.3 ***Low***
Endosulfan II	ND	0.036	0.10	ug/L	0.038	ND	0	63-144			07/30/18	MS1.3 ***Low***
Endosulfan Sulfate	ND	0.015	0.10	ug/L	0.038	ND	0	65-145			07/30/18	MS1.3 ***Low***
Endrin	0.047	0.016	0.10	ug/L	0.038	ND	124	55-153			07/30/18	J
Endrin Aldehyde	ND	0.013	0.10	ug/L	0.038	ND	0	68-128			07/30/18	MS1.3 ***Low***
Heptachlor	0.022	0.014	0.10	ug/L	0.038	ND	57	34-147			07/30/18	J
Heptachlor Epoxide	0.030	0.014	0.10	ug/L	0.038	ND	80	57-150			07/30/18	J
Lindane	ND	0.050	0.10	ug/L	0.038	ND	0	58-148			07/30/18	MS1.3 ***Low***
Surrogate: TCMX	*0.22*				*0.29*		*78*	*26-144*			07/30/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810792											Prepared: 7/26/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A810792-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							07/26/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							07/26/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							07/26/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							07/26/18	
1,1-Dichloroethene	ND	0.12	0.50	ug/L							07/26/18	
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							07/26/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							07/26/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							07/26/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							07/26/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							07/26/18	
2-Butanone	ND	1.2	20	ug/L							07/26/18	
2-Hexanone	ND	1.2	20	ug/L							07/26/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							07/26/18	
Acetone	3.0	1.4	5.0	ug/L							07/26/18	B2.0, J
Benzene	ND	0.15	0.50	ug/L							07/26/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							07/26/18	
Bromoform	ND	0.14	0.50	ug/L							07/26/18	
Bromomethane	ND	0.19	1.0	ug/L							07/26/18	
Carbon disulfide	ND	1.6	5.0	ug/L							07/26/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							07/26/18	
Chlorobenzene	ND	0.13	0.50	ug/L							07/26/18	
Chloroethane	ND	0.13	0.50	ug/L							07/26/18	
Chloromethane	ND	0.18	0.50	ug/L							07/26/18	
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							07/26/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							07/26/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							07/26/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							07/26/18	
Dichloromethane	ND	0.11	0.50	ug/L							07/26/18	
Ethylbenzene	ND	0.13	0.50	ug/L							07/26/18	
Hexachloroethane	ND	0.15	1.0	ug/L							07/26/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							07/26/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							07/26/18	
o-Xylene	ND	0.12	0.50	ug/L							07/26/18	
Styrene	ND	0.16	0.50	ug/L							07/26/18	
Tetrachloroethene (PCE)	ND	0.11	0.50	ug/L							07/26/18	
Toluene	ND	0.14	0.50	ug/L							07/26/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							07/26/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							07/26/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							07/26/18	
Trichlorofluoromethane	ND	0.12	0.50	ug/L							07/26/18	
Vinyl Chloride	ND	0.15	0.50	ug/L							07/26/18	
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			07/26/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810792											Prepared: 7/26/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A810792-BLK1)												
Surrogate: Bromofluorobenzene	*50*				*50*		*100*	*70-130*			07/26/18	
Surrogate: Toluene-d8	*48*				*50*		*95*	*70-130*			07/26/18	
Blank Spike (A810792-BS1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		120	52-162			07/26/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		102	46-157			07/26/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		103	52-150			07/26/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10		120	59-155			07/26/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		121	10-234			07/26/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		101	18-190			07/26/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10		120	49-155			07/26/18	
1,2-Dichloropropane	12	0.12	0.50	ug/L	10		119	10-210			07/26/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		100	59-156			07/26/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		103	18-190			07/26/18	
2-Butanone	12	1.2	20	ug/L	10		115	46-156			07/26/18	J
2-Hexanone	11	1.2	20	ug/L	10		105	56-135			07/26/18	J
4-Methyl-2-pentanone	12	0.97	20	ug/L	10		119	67-136			07/26/18	J
Acetone	13	1.4	5.0	ug/L	10		130	19-194			07/26/18	
Benzene	12	0.15	0.50	ug/L	10		119	37-151			07/26/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10		118	35-155			07/26/18	
Bromoform	9.9	0.14	0.50	ug/L	10		99	45-169			07/26/18	
Bromomethane	15	0.19	1.0	ug/L	10		148	10-242			07/26/18	
Carbon disulfide	12	1.6	5.0	ug/L	10		118	78-140			07/26/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		114	70-140			07/26/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		104	37-160			07/26/18	
Chloroethane	12	0.13	0.50	ug/L	10		116	14-230			07/26/18	
Chloromethane	11	0.18	0.50	ug/L	10		110	10-273			07/26/18	
cis-1,2-Dichloroethene	12	0.10	0.50	ug/L	10		122	81-130			07/26/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10		118	10-227			07/26/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		103	53-149			07/26/18	
Dichlorodifluoromethane	9.7	0.11	1.0	ug/L	10		97	52-171			07/26/18	
Dichloromethane	12	0.11	0.50	ug/L	10		117	10-221			07/26/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		104	37-162			07/26/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		120	78-145			07/26/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		105	83-108			07/26/18	
Methyl-t-butyl ether	24	0.22	0.50	ug/L	20		118	79-131			07/26/18	
o-Xylene	10	0.12	0.50	ug/L	10		104	81-115			07/26/18	
Styrene	10	0.16	0.50	ug/L	10		103	78-117			07/26/18	
Tetrachloroethene (PCE)	9.1	0.11	0.50	ug/L	10		91	64-148			07/26/18	
Toluene	10	0.14	0.50	ug/L	10		105	47-150			07/26/18	
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10		121	54-156			07/26/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		104	17-183			07/26/18	
Trichloroethene (TCE)	12	0.13	0.50	ug/L	10		120	71-157			07/26/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810792											Prepared: 7/26/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A810792-BS1)												
Trichlorofluoromethane	12	0.12	0.50	ug/L	10		123	17-181			07/26/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		117	10-251			07/26/18	
Surrogate: 1,2-Dichloroethane-d4	*56*				*50*		*112*	*70-130*			07/26/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*99*	*70-130*			07/26/18	
Surrogate: Toluene-d8	*48*				*50*		*96*	*70-130*			07/26/18	
Blank Spike Dup (A810792-BSD1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		118	52-162	2	30	07/26/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		104	46-157	2	30	07/26/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		103	52-150	0	30	07/26/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10		117	59-155	2	30	07/26/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		119	10-234	2	30	07/26/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190	1	30	07/26/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10		119	49-155	1	30	07/26/18	
1,2-Dichloropropane	12	0.12	0.50	ug/L	10		119	10-210	0	30	07/26/18	
1,3-Dichlorobenzene	9.8	0.11	0.50	ug/L	10		98	59-156	2	30	07/26/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		103	18-190	0	30	07/26/18	
2-Butanone	12	1.2	20	ug/L	10		118	46-156	2	30	07/26/18	J
2-Hexanone	11	1.2	20	ug/L	10		105	56-135	0	30	07/26/18	J
4-Methyl-2-pentanone	12	0.97	20	ug/L	10		120	67-136	0	30	07/26/18	J
Acetone	13	1.4	5.0	ug/L	10		133	19-194	3	30	07/26/18	
Benzene	12	0.15	0.50	ug/L	10		116	37-151	2	30	07/26/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10		119	35-155	1	30	07/26/18	
Bromoform	10	0.14	0.50	ug/L	10		101	45-169	2	30	07/26/18	
Bromomethane	14	0.19	1.0	ug/L	10		139	10-242	6	30	07/26/18	
Carbon disulfide	12	1.6	5.0	ug/L	10		116	78-140	2	30	07/26/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		112	70-140	2	30	07/26/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		104	37-160	0	30	07/26/18	
Chloroethane	11	0.13	0.50	ug/L	10		114	14-230	2	30	07/26/18	
Chloromethane	11	0.18	0.50	ug/L	10		107	10-273	3	30	07/26/18	
cis-1,2-Dichloroethene	12	0.10	0.50	ug/L	10		120	81-130	1	30	07/26/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10		117	10-227	0	30	07/26/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		104	53-149	1	30	07/26/18	
Dichlorodifluoromethane	9.5	0.11	1.0	ug/L	10		95	52-171	2	30	07/26/18	
Dichloromethane	12	0.11	0.50	ug/L	10		117	10-221	1	30	07/26/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		102	37-162	2	30	07/26/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		116	78-145	3	30	07/26/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		104	83-108	1	30	07/26/18	
Methyl-t-butyl ether	23	0.22	0.50	ug/L	20		117	79-131	0	30	07/26/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115	1	30	07/26/18	
Styrene	10	0.16	0.50	ug/L	10		103	78-117	0	30	07/26/18	
Tetrachloroethene (PCE)	8.6	0.11	0.50	ug/L	10		86	64-148	5	30	07/26/18	
Toluene	10	0.14	0.50	ug/L	10		103	47-150	1	30	07/26/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810792											Prepared: 7/26/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A810792-BSD1)												
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10		118	54-156	3	30	07/26/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		104	17-183	0	30	07/26/18	
Trichloroethene (TCE)	12	0.13	0.50	ug/L	10		116	71-157	3	30	07/26/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10		120	17-181	2	30	07/26/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10		113	10-251	3	30	07/26/18	
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*107*	*70-130*			07/26/18	
Surrogate: Bromofluorobenzene	*49*				*50*		*98*	*70-130*			07/26/18	
Surrogate: Toluene-d8	*47*				*50*		*94*	*70-130*			07/26/18	
Matrix Spike (A810792-MS1), Source: A8G3444-01												
1,1,1-Trichloroethane	13	0.14	0.50	ug/L	10	ND	133	52-162			07/26/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10	ND	100	46-157			07/26/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	105	52-150			07/26/18	
1,1-Dichloroethane	13	0.11	0.50	ug/L	10	ND	133	59-155			07/26/18	
1,1-Dichloroethene	14	0.12	0.50	ug/L	10	ND	135	10-234			07/26/18	
1,2-Dichlorobenzene	9.9	0.12	0.50	ug/L	10	ND	99	18-190			07/26/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10	ND	120	49-155			07/26/18	
1,2-Dichloropropane	13	0.12	0.50	ug/L	10	ND	126	10-210			07/26/18	
1,3-Dichlorobenzene	9.9	0.11	0.50	ug/L	10	ND	99	59-156			07/26/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	100	18-190			07/26/18	
2-Butanone	11	1.2	20	ug/L	10	ND	112	46-156			07/26/18	J
2-Hexanone	11	1.2	20	ug/L	10	ND	106	56-135			07/26/18	J
4-Methyl-2-pentanone	13	0.97	20	ug/L	10	ND	127	67-136			07/26/18	J
Acetone	10	1.4	5.0	ug/L	10	ND	103	19-194			07/26/18	
Benzene	13	0.15	0.50	ug/L	10	ND	129	37-151			07/26/18	
Bromodichloromethane	13	0.10	0.50	ug/L	10	ND	132	35-155			07/26/18	
Bromoform	11	0.14	0.50	ug/L	10	ND	111	45-169			07/26/18	
Bromomethane	5.5	0.19	1.0	ug/L	10	ND	55	10-242			07/26/18	
Carbon disulfide	17	1.6	5.0	ug/L	10	ND	173	78-140			07/26/18	MS1.0 ***High***
Carbon Tetrachloride	13	0.10	0.50	ug/L	10	ND	128	70-140			07/26/18	
Chlorobenzene	11	0.13	0.50	ug/L	10	ND	108	37-160			07/26/18	
Chloroethane	12	0.13	0.50	ug/L	10	ND	123	14-230			07/26/18	
Chloromethane	8.0	0.18	0.50	ug/L	10	ND	80	10-273			07/26/18	
cis-1,2-Dichloroethene	13	0.10	0.50	ug/L	10	ND	133	81-130			07/26/18	MS1.0 ***High***
cis-1,3-Dichloropropene	11	0.11	0.50	ug/L	10	ND	111	10-227			07/26/18	
Dibromochloromethane	11	0.085	0.50	ug/L	10	ND	111	53-149			07/26/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10	0.20	105	52-171			07/26/18	
Dichloromethane	13	0.11	0.50	ug/L	10	ND	125	10-221			07/26/18	
Ethylbenzene	11	0.13	0.50	ug/L	10	ND	106	37-162			07/26/18	
Hexachloroethane	15	0.15	1.0	ug/L	10	0.24	144	78-145			07/26/18	
m,p-Xylenes	22	0.22	0.50	ug/L	20	ND	108	83-108			07/26/18	
Methyl-t-butyl ether	24	0.22	0.50	ug/L	20	ND	120	79-131			07/26/18	
o-Xylene	10	0.12	0.50	ug/L	10	ND	104	81-115			07/26/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810792											Prepared: 7/26/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A810792-MS1), Source: A8G3444-01												
Styrene	0.33	0.16	0.50	ug/L	10	ND	3	78-117			07/26/18	MS1.0 ***Low***, J
Tetrachloroethene (PCE)	8.3	0.11	0.50	ug/L	10	ND	83	64-148			07/26/18	
Toluene	11	0.14	0.50	ug/L	10	ND	110	47-150			07/26/18	
trans-1,2-Dichloroethene	14	0.13	0.50	ug/L	10	ND	138	54-156			07/26/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10	ND	103	17-183			07/26/18	
Trichloroethene (TCE)	12	0.13	0.50	ug/L	10	ND	118	71-157			07/26/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10	0.17	120	17-181			07/26/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10	ND	119	10-251			07/26/18	
Surrogate: 1,2-Dichloroethane-d4	*55*				*50*		*110*	*70-130*			07/26/18	
Surrogate: Bromofluorobenzene	*49*				*50*		*99*	*70-130*			07/26/18	
Surrogate: Toluene-d8	*47*				*50*		*94*	*70-130*			07/26/18	
EPA 624 - Quality Control												
Batch: A810869											Prepared: 7/27/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A810869-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							07/28/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							07/28/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							07/28/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							07/28/18	
1,1-Dichloroethene	ND	0.12	0.50	ug/L							07/28/18	
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							07/28/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							07/28/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							07/28/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							07/28/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							07/28/18	
2-Butanone	ND	1.2	20	ug/L							07/28/18	
2-Hexanone	ND	1.2	20	ug/L							07/28/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							07/28/18	
Acetone	ND	1.4	5.0	ug/L							07/28/18	
Benzene	ND	0.15	0.50	ug/L							07/28/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							07/28/18	
Bromoform	ND	0.14	0.50	ug/L							07/28/18	
Bromomethane	0.37	0.19	1.0	ug/L							07/28/18	B2.0, J
Carbon disulfide	ND	1.6	5.0	ug/L							07/28/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							07/28/18	
Chlorobenzene	ND	0.13	0.50	ug/L							07/28/18	
Chloroethane	ND	0.13	0.50	ug/L							07/28/18	
Chloroform	ND	0.10	0.50	ug/L							07/28/18	
Chloromethane	0.23	0.18	0.50	ug/L							07/28/18	B2.0, J
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							07/28/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810869											Prepared: 7/27/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A810869-BLK1)												
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							07/28/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							07/28/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							07/28/18	
Dichloromethane	ND	0.11	0.50	ug/L							07/28/18	
Ethylbenzene	ND	0.13	0.50	ug/L							07/28/18	
Hexachloroethane	ND	0.15	1.0	ug/L							07/28/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							07/28/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							07/28/18	
o-Xylene	ND	0.12	0.50	ug/L							07/28/18	
Styrene	ND	0.16	0.50	ug/L							07/28/18	
Tetrachloroethene (PCE)	0.28	0.11	0.50	ug/L							07/28/18	B2.0, J
Toluene	ND	0.14	0.50	ug/L							07/28/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							07/28/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							07/28/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							07/28/18	
Trichlorofluoromethane	ND	0.12	0.50	ug/L							07/28/18	
Vinyl Chloride	ND	0.15	0.50	ug/L							07/28/18	
Surrogate: 1,2-Dichloroethane-d4	*49*				*50*		*98*	*70-130*			07/28/18	
Surrogate: Bromofluorobenzene	*53*				*50*		*105*	*70-130*			07/28/18	
Surrogate: Toluene-d8	*50*				*50*		*100*	*70-130*			07/28/18	
Blank Spike (A810869-BS1)												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10		108	52-162			07/28/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		100	46-157			07/28/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-150			07/28/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10		107	59-155			07/28/18	
1,1-Dichloroethene	11	0.12	0.50	ug/L	10		110	10-234			07/28/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190			07/28/18	
1,2-Dichloroethane	10	0.10	0.50	ug/L	10		105	49-155			07/28/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10		106	10-210			07/28/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		104	59-156			07/28/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		103	18-190			07/28/18	
2-Butanone	11	1.2	20	ug/L	10		106	46-156			07/28/18	J
2-Hexanone	10	1.2	20	ug/L	10		100	56-135			07/28/18	J
4-Methyl-2-pentanone	10	0.97	20	ug/L	10		102	67-136			07/28/18	J
Acetone	11	1.4	5.0	ug/L	10		110	19-194			07/28/18	
Benzene	11	0.15	0.50	ug/L	10		107	37-151			07/28/18	
Bromodichloromethane	11	0.10	0.50	ug/L	10		107	35-155			07/28/18	
Bromoform	10	0.14	0.50	ug/L	10		104	45-169			07/28/18	
Bromomethane	14	0.19	1.0	ug/L	10		140	10-242			07/28/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		111	78-140			07/28/18	
Carbon Tetrachloride	9.7	0.10	0.50	ug/L	10		97	70-140			07/28/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		103	37-160			07/28/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810869											Prepared: 7/27/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A810869-BS1)												
Chloroethane	11	0.13	0.50	ug/L	10		107	14-230			07/28/18	
Chloroform	10	0.10	0.50	ug/L	10		103	51-138			07/28/18	
Chloromethane	12	0.18	0.50	ug/L	10		120	10-273			07/28/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10		106	81-130			07/28/18	
cis-1,3-Dichloropropene	11	0.11	0.50	ug/L	10		106	10-227			07/28/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		104	53-149			07/28/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		111	52-171			07/28/18	
Dichloromethane	11	0.11	0.50	ug/L	10		106	10-221			07/28/18	
Ethylbenzene	11	0.13	0.50	ug/L	10		106	37-162			07/28/18	
Hexachloroethane	9.8	0.15	1.0	ug/L	10		98	78-145			07/28/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		105	83-108			07/28/18	
Methyl-t-butyl ether	21	0.22	0.50	ug/L	20		106	79-131			07/28/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115			07/28/18	
Styrene	10	0.16	0.50	ug/L	10		103	78-117			07/28/18	
Tetrachloroethene (PCE)	12	0.11	0.50	ug/L	10		120	64-148			07/28/18	
Toluene	10	0.14	0.50	ug/L	10		104	47-150			07/28/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10		108	54-156			07/28/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		103	17-183			07/28/18	
Trichloroethene (TCE)	10	0.13	0.50	ug/L	10		102	71-157			07/28/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		111	17-181			07/28/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		116	10-251			07/28/18	
Surrogate: 1,2-Dichloroethane-d4	*50*				*50*		*101*	*70-130*			07/28/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*102*	*70-130*			07/28/18	
Surrogate: Toluene-d8	*49*				*50*		*97*	*70-130*			07/28/18	
Blank Spike Dup (A810869-BSD1)												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10		109	52-162	0	30	07/28/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		101	46-157	0	30	07/28/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-150	1	30	07/28/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10		106	59-155	1	30	07/28/18	
1,1-Dichloroethene	11	0.12	0.50	ug/L	10		111	10-234	1	30	07/28/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		104	18-190	2	30	07/28/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10		105	49-155	1	30	07/28/18	
1,2-Dichloropropane	10	0.12	0.50	ug/L	10		105	10-210	1	30	07/28/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		100	59-156	4	30	07/28/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		103	18-190	0	30	07/28/18	
2-Butanone	11	1.2	20	ug/L	10		107	46-156	1	30	07/28/18	J
2-Hexanone	9.8	1.2	20	ug/L	10		98	56-135	2	30	07/28/18	J
4-Methyl-2-pentanone	10	0.97	20	ug/L	10		102	67-136	0	30	07/28/18	J
Acetone	11	1.4	5.0	ug/L	10		109	19-194	1	30	07/28/18	
Benzene	11	0.15	0.50	ug/L	10		107	37-151	0	30	07/28/18	
Bromodichloromethane	11	0.10	0.50	ug/L	10		106	35-155	1	30	07/28/18	
Bromoform	10	0.14	0.50	ug/L	10		104	45-169	0	30	07/28/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810869											Prepared: 7/27/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A810869-BSD1)												
Bromomethane	15	0.19	1.0	ug/L	10		146	10-242	4	30	07/28/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		111	78-140	0	30	07/28/18	
Carbon Tetrachloride	9.6	0.10	0.50	ug/L	10		96	70-140	1	30	07/28/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		104	37-160	1	30	07/28/18	
Chloroethane	11	0.13	0.50	ug/L	10		107	14-230	1	30	07/28/18	
Chloroform	10	0.10	0.50	ug/L	10		101	51-138	2	30	07/28/18	
Chloromethane	12	0.18	0.50	ug/L	10		123	10-273	2	30	07/28/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10		105	81-130	1	30	07/28/18	
cis-1,3-Dichloropropene	10	0.11	0.50	ug/L	10		105	10-227	2	30	07/28/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		104	53-149	0	30	07/28/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		111	52-171	0	30	07/28/18	
Dichloromethane	11	0.11	0.50	ug/L	10		105	10-221	1	30	07/28/18	
Ethylbenzene	11	0.13	0.50	ug/L	10		105	37-162	1	30	07/28/18	
Hexachloroethane	10	0.15	1.0	ug/L	10		100	78-145	2	30	07/28/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		105	83-108	0	30	07/28/18	
Methyl-t-butyl ether	21	0.22	0.50	ug/L	20		105	79-131	1	30	07/28/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115	0	30	07/28/18	
Styrene	10	0.16	0.50	ug/L	10		102	78-117	1	30	07/28/18	
Tetrachloroethene (PCE)	12	0.11	0.50	ug/L	10		121	64-148	0	30	07/28/18	
Toluene	10	0.14	0.50	ug/L	10		104	47-150	1	30	07/28/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10		106	54-156	1	30	07/28/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		104	17-183	1	30	07/28/18	
Trichloroethene (TCE)	10	0.13	0.50	ug/L	10		102	71-157	0	30	07/28/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		111	17-181	0	30	07/28/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		117	10-251	1	30	07/28/18	
Surrogate: 1,2-Dichloroethane-d4	*52*				*50*		*105*	*70-130*			07/28/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*102*	*70-130*			07/28/18	
Surrogate: Toluene-d8	*50*				*50*		*101*	*70-130*			07/28/18	
Matrix Spike (A810869-MS1), Source: A8G3576-01												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10	ND	120	52-162			07/28/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10	ND	103	46-157			07/28/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	102	52-150			07/28/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10	ND	118	59-155			07/28/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10	ND	123	10-234			07/28/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	102	18-190			07/28/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10	ND	112	49-155			07/28/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10	ND	113	10-210			07/28/18	
1,3-Dichlorobenzene	9.3	0.11	0.50	ug/L	10	ND	93	59-156			07/28/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	102	18-190			07/28/18	
2-Butanone	14	1.2	20	ug/L	10	3.2	104	46-156			07/28/18	J
2-Hexanone	9.8	1.2	20	ug/L	10	2.5	74	56-135			07/28/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10	ND	107	67-136			07/28/18	J

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A810869											Prepared: 7/27/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A810869-MS1), Source: A8G3576-01												
Acetone	40	1.4	5.0	ug/L	10	27	133	19-194			07/28/18	
Benzene	12	0.15	0.50	ug/L	10	ND	116	37-151			07/28/18	
Bromodichloromethane	11	0.10	0.50	ug/L	10	0.17	112	35-155			07/28/18	
Bromoform	9.4	0.14	0.50	ug/L	10	ND	94	45-169			07/28/18	
Bromomethane	13	0.19	1.0	ug/L	10	ND	130	10-242			07/28/18	
Carbon disulfide	12	1.6	5.0	ug/L	10	ND	117	78-140			07/28/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10	ND	106	70-140			07/28/18	
Chlorobenzene	11	0.13	0.50	ug/L	10	ND	107	37-160			07/28/18	
Chloroethane	12	0.13	0.50	ug/L	10	ND	120	14-230			07/28/18	
Chloroform	12	0.10	0.50	ug/L	10	2.0	103	51-138			07/28/18	
Chloromethane	14	0.18	0.50	ug/L	10	0.58	138	10-273			07/28/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10	ND	112	81-130			07/28/18	
cis-1,3-Dichloropropene	10	0.11	0.50	ug/L	10	ND	105	10-227			07/28/18	
Dibromochloromethane	9.9	0.085	0.50	ug/L	10	ND	99	53-149			07/28/18	
Dichlorodifluoromethane	10	0.11	1.0	ug/L	10	ND	100	52-171			07/28/18	
Dichloromethane	12	0.11	0.50	ug/L	10	ND	116	10-221			07/28/18	
Ethylbenzene	11	0.13	0.50	ug/L	10	ND	109	37-162			07/28/18	
Hexachloroethane	8.8	0.15	1.0	ug/L	10	0.19	87	78-145			07/28/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20	ND	107	83-108			07/28/18	
Methyl-t-butyl ether	22	0.22	0.50	ug/L	20	ND	108	79-131			07/28/18	
o-Xylene	10	0.12	0.50	ug/L	10	ND	105	81-115			07/28/18	
Styrene	10	0.16	0.50	ug/L	10	ND	104	78-117			07/28/18	
Tetrachloroethene (PCE)	9.9	0.11	0.50	ug/L	10	0.27	96	64-148			07/28/18	
Toluene	12	0.14	0.50	ug/L	10	1.6	108	47-150			07/28/18	
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10	ND	117	54-156			07/28/18	
trans-1,3-Dichloropropene	9.6	0.12	0.50	ug/L	10	ND	96	17-183			07/28/18	
Trichloroethene (TCE)	12	0.13	0.50	ug/L	10	ND	117	71-157			07/28/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10	ND	115	17-181			07/28/18	
Vinyl Chloride	13	0.15	0.50	ug/L	10	ND	127	10-251			07/28/18	
Surrogate: 1,2-Dichloroethane-d4	*54*				*50*		*107*	*70-130*			07/28/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*100*	*70-130*			07/28/18	
Surrogate: Toluene-d8	*48*				*50*		*96*	*70-130*			07/28/18	
EPA 625 - Quality Control												
Batch: A810615											Prepared: 7/25/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A810615-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	0.50	ug/L							07/31/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	0.50	ug/L							07/31/18	
2,4,6-Trichlorophenol	ND	0.14	0.50	ug/L							07/31/18	
2,4-Dichlorophenol	ND	0.10	0.50	ug/L							07/31/18	
2,4-Dimethylphenol	ND	0.15	0.50	ug/L							07/31/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A810615											Prepared: 7/25/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A810615-BLK1)												
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							07/31/18	
2,4-Dinitrotoluene	ND	0.10	0.50	ug/L							07/31/18	
2,6-Dinitrotoluene	ND	0.36	0.50	ug/L							07/31/18	
2-Chloronaphthalene	ND	0.10	0.50	ug/L							07/31/18	
2-Chlorophenol	ND	0.11	0.50	ug/L							07/31/18	
2-Nitrophenol	ND	0.21	0.50	ug/L							07/31/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L							07/31/18	
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							07/31/18	
4-Bromophenyl phenyl ether	ND	0.10	0.50	ug/L							07/31/18	
4-Chloro-3-methylphenol	ND	0.10	0.50	ug/L							07/31/18	
4-Chlorophenyl phenyl ether	ND	0.23	0.50	ug/L							07/31/18	
4-Nitrophenol	ND	0.26	1.0	ug/L							07/31/18	
Acenaphthene	ND	0.0040	0.010	ug/L							07/31/18	
Acenaphthylene	ND	0.0023	0.010	ug/L							07/31/18	
Anthracene	ND	0.0020	0.010	ug/L							07/31/18	
Benzidine	ND	1.4	5.0	ug/L							07/31/18	
Benzo(a)anthracene	ND	0.0023	0.010	ug/L							07/31/18	
Benzo(a)pyrene	ND	0.0033	0.010	ug/L							07/31/18	
Benzo(b)fluoranthene	ND	0.0021	0.010	ug/L							07/31/18	
Benzo(g,h,i)perylene	ND	0.0039	0.010	ug/L							07/31/18	
Benzo(k)fluoranthene	ND	0.0028	0.010	ug/L							07/31/18	
Bis(2-chloroethoxy)methane	ND	0.10	0.50	ug/L							07/31/18	
Bis(2-chloroethyl) ether	ND	0.15	0.50	ug/L							07/31/18	
Bis(2-chloroisopropyl) ether	ND	0.13	0.50	ug/L							07/31/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	1.0	ug/L							07/31/18	
Butyl benzyl phthalate	ND	0.10	0.50	ug/L							07/31/18	
Chrysene	ND	0.0011	0.010	ug/L							07/31/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.010	ug/L							07/31/18	
Diethyl phthalate	ND	0.10	0.50	ug/L							07/31/18	
Dimethyl phthalate	ND	0.10	0.50	ug/L							07/31/18	
Di-n-butyl phthalate	ND	0.14	0.50	ug/L							07/31/18	
Di-n-octyl phthalate	ND	0.11	0.50	ug/L							07/31/18	
Fluoranthene	ND	0.0012	0.010	ug/L							07/31/18	
Fluorene	ND	0.0043	0.010	ug/L							07/31/18	
Hexachlorobenzene	ND	0.15	0.50	ug/L							07/31/18	
Hexachlorobutadiene	ND	0.13	0.50	ug/L							07/31/18	
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L							07/31/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.010	ug/L							07/31/18	
Isophorone	ND	0.11	0.50	ug/L							07/31/18	
Naphthalene	ND	0.0027	0.010	ug/L							07/31/18	
Nitrobenzene	ND	0.11	0.50	ug/L							07/31/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	0.50	ug/L							07/31/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	0.50	ug/L							07/31/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A810615											Prepared: 7/25/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A810615-BLK1)												
N-Nitrosodiphenylamine (as DPA)	ND	0.24	0.50	ug/L							07/31/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							07/31/18	
Phenanthrene	ND	0.0024	0.010	ug/L							07/31/18	
Phenol	ND	0.10	0.50	ug/L							07/31/18	
Pyrene	ND	0.0014	0.010	ug/L							07/31/18	
Surrogate: 2,4,6-Tribromophenol	*7.4*				*5.0*		*149*	*53-200*			07/31/18	
Surrogate: 2-Fluorobiphenyl	*4.3*				*5.0*		*87*	*40-127*			07/31/18	
Surrogate: 2-Fluorophenol	*4.3*				*5.0*		*85*	*42-123*			07/31/18	
Surrogate: Nitrobenzene-d5	*3.5*				*5.0*		*71*	*49-133*			07/31/18	
Surrogate: Phenol-d6	*5.1*				*5.0*		*102*	*52-125*			07/31/18	
Surrogate: p-Terphenyl-d14	*5.0*				*5.0*		*99*	*39-135*			07/31/18	
Blank Spike (A810615-BS1)												
1,2,4-Trichlorobenzene	3.9	0.10	0.50	ug/L	5.0		77	44-142			07/31/18	
1,2-Diphenylhydrazine (as Azobenzene)	4.1	0.10	0.50	ug/L	5.0		81	30-130			07/31/18	
2,4,6-Trichlorophenol	4.3	0.14	0.50	ug/L	5.0		86	37-144			07/31/18	
2,4-Dichlorophenol	4.4	0.10	0.50	ug/L	5.0		89	39-135			07/31/18	
2,4-Dimethylphenol	3.6	0.15	0.50	ug/L	5.0		71	10-175			07/31/18	
2,4-Dinitrophenol	5.0	0.27	1.0	ug/L	5.0		100	10-191			07/31/18	
2,4-Dinitrotoluene	5.5	0.10	0.50	ug/L	5.0		111	39-139			07/31/18	
2,6-Dinitrotoluene	5.2	0.36	0.50	ug/L	5.0		105	50-158			07/31/18	
2-Chloronaphthalene	4.3	0.10	0.50	ug/L	5.0		85	60-118			07/31/18	
2-Chlorophenol	4.0	0.11	0.50	ug/L	5.0		81	23-134			07/31/18	
2-Nitrophenol	4.8	0.21	0.50	ug/L	5.0		97	29-182			07/31/18	
3,3-Dichlorobenzidine	3.9	0.54	2.0	ug/L	20		20	10-200			07/31/18	
4,6-Dinitro-2-methylphenol	4.6	0.11	0.50	ug/L	5.0		91	10-181			07/31/18	
4-Bromophenyl phenyl ether	4.6	0.10	0.50	ug/L	5.0		92	53-127			07/31/18	
4-Chloro-3-methylphenol	4.3	0.10	0.50	ug/L	5.0		86	22-147			07/31/18	
4-Chlorophenyl phenyl ether	4.6	0.23	0.50	ug/L	5.0		91	25-158			07/31/18	
4-Nitrophenol	4.9	0.26	1.0	ug/L	5.0		99	10-132			07/31/18	
Acenaphthene	0.091	0.0040	0.010	ug/L	0.10		91	47-145			07/31/18	
Acenaphthylene	0.077	0.0023	0.010	ug/L	0.10		77	33-145			07/31/18	
Anthracene	0.090	0.0020	0.010	ug/L	0.10		90	27-133			07/31/18	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			07/31/18	BS ***Low***
Benzo(a)anthracene	0.095	0.0023	0.010	ug/L	0.10		95	33-143			07/31/18	
Benzo(a)pyrene	0.075	0.0033	0.010	ug/L	0.10		75	17-163			07/31/18	
Benzo(b)fluoranthene	0.11	0.0021	0.010	ug/L	0.10		110	24-159			07/31/18	
Benzo(g,h,i)perylene	0.092	0.0039	0.010	ug/L	0.10		92	10-200			07/31/18	
Benzo(k)fluoranthene	0.10	0.0028	0.010	ug/L	0.10		100	11-162			07/31/18	
Bis(2-chloroethoxy)methane	4.6	0.10	0.50	ug/L	5.0		92	33-184			07/31/18	
Bis(2-chloroethyl) ether	4.7	0.15	0.50	ug/L	5.0		93	12-158			07/31/18	
Bis(2-chloroisopropyl) ether	4.7	0.13	0.50	ug/L	5.0		95	36-166			07/31/18	
Bis(2-ethylhexyl) phthalate	4.9	0.29	1.0	ug/L	5.0		98	10-158			07/31/18	
Butyl benzyl phthalate	3.6	0.10	0.50	ug/L	5.0		71	10-152			07/31/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A810615											Prepared: 7/25/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A810615-BS1)												
Chrysene	0.097	0.0011	0.010	ug/L	0.10		97	17-168			07/31/18	
Dibenzo(a,h)anthracene	0.11	0.0031	0.010	ug/L	0.10		106	10-200			07/31/18	
Diethyl phthalate	3.6	0.10	0.50	ug/L	5.0		72	10-114			07/31/18	
Dimethyl phthalate	2.1	0.10	0.50	ug/L	5.0		42	10-112			07/31/18	
Di-n-butyl phthalate	4.3	0.14	0.50	ug/L	5.0		87	10-118			07/31/18	
Di-n-octyl phthalate	4.9	0.11	0.50	ug/L	5.0		99	10-146			07/31/18	
Fluoranthene	0.099	0.0012	0.010	ug/L	0.10		99	26-137			07/31/18	
Fluorene	0.092	0.0043	0.010	ug/L	0.10		92	59-121			07/31/18	
Hexachlorobenzene	4.5	0.15	0.50	ug/L	5.0		90	10-152			07/31/18	
Hexachlorobutadiene	3.2	0.13	0.50	ug/L	5.0		63	24-116			07/31/18	
Hexachlorocyclopentadiene	2.6	0.14	0.50	ug/L	5.0		52	10-130			07/31/18	
Indeno(1,2,3-cd)pyrene	0.093	0.0027	0.010	ug/L	0.10		93	10-171			07/31/18	
Isophorone	4.7	0.11	0.50	ug/L	5.0		93	21-196			07/31/18	
Naphthalene	0.088	0.0027	0.010	ug/L	0.10		88	21-133			07/31/18	
Nitrobenzene	4.9	0.11	0.50	ug/L	5.0		98	35-180			07/31/18	
N-Nitrosodimethylamine (NDMA)	3.4	0.48	0.50	ug/L	5.0		68	10-130			07/31/18	
N-Nitrosodi-n-propylamine (NDPA)	3.6	0.10	0.50	ug/L	5.0		71	10-200			07/31/18	
N-Nitrosodiphenylamine (as DPA)	4.7	0.24	0.50	ug/L	5.0		93	10-130			07/31/18	
Pentachlorophenol	4.8	0.20	1.0	ug/L	5.0		95	14-176			07/31/18	
Phenanthrene	0.093	0.0024	0.010	ug/L	0.10		93	54-120			07/31/18	
Phenol	4.1	0.10	0.50	ug/L	5.0		82	10-112			07/31/18	
Pyrene	0.097	0.0014	0.010	ug/L	0.10		97	52-115			07/31/18	
Surrogate: 2,4,6-Tribromophenol	*8.0*				*5.0*		*160*	*53-200*			07/31/18	
Surrogate: 2-Fluorobiphenyl	*4.4*				*5.0*		*88*	*40-127*			07/31/18	
Surrogate: 2-Fluorophenol	*4.1*				*5.0*		*82*	*42-123*			07/31/18	
Surrogate: Nitrobenzene-d5	*4.6*				*5.0*		*93*	*49-133*			07/31/18	
Surrogate: Phenol-d6	*4.5*				*5.0*		*90*	*52-125*			07/31/18	
Surrogate: p-Terphenyl-d14	*4.7*				*5.0*		*95*	*39-135*			07/31/18	
Blank Spike Dup (A810615-BSD1)												
1,2,4-Trichlorobenzene	4.0	0.10	0.50	ug/L	5.0		81	44-142	4	30	07/31/18	
1,2-Diphenylhydrazine (as Azobenzene)	4.4	0.10	0.50	ug/L	5.0		88	30-130	8	30	07/31/18	
2,4,6-Trichlorophenol	4.0	0.14	0.50	ug/L	5.0		80	37-144	7	30	07/31/18	
2,4-Dichlorophenol	4.5	0.10	0.50	ug/L	5.0		91	39-135	2	30	07/31/18	
2,4-Dimethylphenol	2.3	0.15	0.50	ug/L	5.0		46	10-175	43	30	07/31/18	BS3.0
2,4-Dinitrophenol	4.6	0.27	1.0	ug/L	5.0		93	10-191	7	30	07/31/18	
2,4-Dinitrotoluene	5.5	0.10	0.50	ug/L	5.0		110	39-139	1	30	07/31/18	
2,6-Dinitrotoluene	5.3	0.36	0.50	ug/L	5.0		105	50-158	1	30	07/31/18	
2-Chloronaphthalene	4.4	0.10	0.50	ug/L	5.0		88	60-118	3	30	07/31/18	
2-Chlorophenol	4.1	0.11	0.50	ug/L	5.0		81	23-134	1	30	07/31/18	
2-Nitrophenol	4.5	0.21	0.50	ug/L	5.0		91	29-182	6	30	07/31/18	
3,3-Dichlorobenzidine	13	0.54	2.0	ug/L	20		63	10-200	104	30	07/31/18	BS3.0
4,6-Dinitro-2-methylphenol	4.1	0.11	0.50	ug/L	5.0		82	10-181	11	30	07/31/18	
4-Bromophenyl phenyl ether	4.6	0.10	0.50	ug/L	5.0		93	53-127	1	30	07/31/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A810615											Prepared: 7/25/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike Dup (A810615-BSD1)													
4-Chloro-3-methylphenol	3.4	0.10	0.50	ug/L	5.0		68	22-147	24	30	07/31/18		
4-Chlorophenyl phenyl ether	4.7	0.23	0.50	ug/L	5.0		93	25-158	2	30	07/31/18		
4-Nitrophenol	4.7	0.26	1.0	ug/L	5.0		94	10-132	4	30	07/31/18		
Acenaphthene	0.092	0.0040	0.010	ug/L	0.10		92	47-145	1	30	07/31/18		
Acenaphthylene	0.074	0.0023	0.010	ug/L	0.10		74	33-145	4	30	07/31/18		
Anthracene	0.084	0.0020	0.010	ug/L	0.10		84	27-133	7	30	07/31/18		
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	07/31/18	BS	***Low***
Benzo(a)anthracene	0.10	0.0023	0.010	ug/L	0.10		103	33-143	8	30	07/31/18		
Benzo(a)pyrene	0.076	0.0033	0.010	ug/L	0.10		76	17-163	2	30	07/31/18		
Benzo(b)fluoranthene	0.11	0.0021	0.010	ug/L	0.10		109	24-159	1	30	07/31/18		
Benzo(g,h,i)perylene	0.095	0.0039	0.010	ug/L	0.10		95	10-200	3	30	07/31/18		
Benzo(k)fluoranthene	0.097	0.0028	0.010	ug/L	0.10		97	11-162	3	30	07/31/18		
Bis(2-chloroethoxy)methane	4.6	0.10	0.50	ug/L	5.0		93	33-184	1	30	07/31/18		
Bis(2-chloroethyl) ether	4.7	0.15	0.50	ug/L	5.0		95	12-158	1	30	07/31/18		
Bis(2-chloroisopropyl) ether	4.7	0.13	0.50	ug/L	5.0		94	36-166	1	30	07/31/18		
Bis(2-ethylhexyl) phthalate	4.9	0.29	1.0	ug/L	5.0		98	10-158	1	30	07/31/18		
Butyl benzyl phthalate	3.4	0.10	0.50	ug/L	5.0		69	10-152	4	30	07/31/18		
Chrysene	0.096	0.0011	0.010	ug/L	0.10		96	17-168	0	30	07/31/18		
Dibenzo(a,h)anthracene	0.11	0.0031	0.010	ug/L	0.10		108	10-200	1	30	07/31/18		
Diethyl phthalate	3.7	0.10	0.50	ug/L	5.0		73	10-114	2	30	07/31/18		
Dimethyl phthalate	2.2	0.10	0.50	ug/L	5.0		44	10-112	5	30	07/31/18		
Di-n-butyl phthalate	4.4	0.14	0.50	ug/L	5.0		87	10-118	1	30	07/31/18		
Di-n-octyl phthalate	4.9	0.11	0.50	ug/L	5.0		98	10-146	1	30	07/31/18		
Fluoranthene	0.10	0.0012	0.010	ug/L	0.10		103	26-137	3	30	07/31/18		
Fluorene	0.095	0.0043	0.010	ug/L	0.10		95	59-121	3	30	07/31/18		
Hexachlorobenzene	4.6	0.15	0.50	ug/L	5.0		91	10-152	1	30	07/31/18		
Hexachlorobutadiene	3.4	0.13	0.50	ug/L	5.0		68	24-116	8	30	07/31/18		
Hexachlorocyclopentadiene	2.8	0.14	0.50	ug/L	5.0		55	10-130	7	30	07/31/18		
Indeno(1,2,3-cd)pyrene	0.096	0.0027	0.010	ug/L	0.10		96	10-171	3	30	07/31/18		
Isophorone	4.7	0.11	0.50	ug/L	5.0		94	21-196	1	30	07/31/18		
Naphthalene	0.090	0.0027	0.010	ug/L	0.10		90	21-133	3	30	07/31/18		
Nitrobenzene	5.3	0.11	0.50	ug/L	5.0		105	35-180	7	30	07/31/18		
N-Nitrosodimethylamine (NDMA)	3.5	0.48	0.50	ug/L	5.0		71	10-130	4	30	07/31/18		
N-Nitrosodi-n-propylamine (NDPA)	3.7	0.10	0.50	ug/L	5.0		74	10-200	4	30	07/31/18		
N-Nitrosodiphenylamine (as DPA)	4.8	0.24	0.50	ug/L	5.0		95	10-130	2	30	07/31/18		
Pentachlorophenol	4.7	0.20	1.0	ug/L	5.0		94	14-176	1	30	07/31/18		
Phenanthrene	0.094	0.0024	0.010	ug/L	0.10		94	54-120	1	30	07/31/18		
Phenol	4.0	0.10	0.50	ug/L	5.0		81	10-112	2	30	07/31/18		
Pyrene	0.096	0.0014	0.010	ug/L	0.10		96	52-115	1	30	07/31/18		
Surrogate: 2,4,6-Tribromophenol	*7.0*				*5.0*		*139*	*53-200*			07/31/18		
Surrogate: 2-Fluorobiphenyl	*4.5*				*5.0*		*89*	*40-127*			07/31/18		
Surrogate: 2-Fluorophenol	*4.1*				*5.0*		*83*	*42-123*			07/31/18		
Surrogate: Nitrobenzene-d5	*4.6*				*5.0*		*93*	*49-133*			07/31/18		

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A810615											Prepared: 7/25/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A810615-BSD1)												
Surrogate: Phenol-d6	*4.6*				*5.0*		*92*	*52-125*			07/31/18	
Surrogate: p-Terphenyl-d14	*4.6*				*5.0*		*93*	*39-135*			07/31/18	
Matrix Spike (A810615-MS1), Source: A8G2848-01												
1,2,4-Trichlorobenzene	3.2	0.50	2.5	ug/L	4.9	ND	66	44-142			08/01/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.3	0.50	2.5	ug/L	4.9	ND	66	30-130			08/01/18	
2,4,6-Trichlorophenol	4.7	0.70	2.5	ug/L	4.9	ND	96	37-144			08/01/18	
2,4-Dichlorophenol	4.2	0.50	2.5	ug/L	4.9	ND	85	39-135			08/01/18	
2,4-Dimethylphenol	2.7	0.76	2.5	ug/L	4.9	ND	55	32-119			08/01/18	
2,4-Dinitrophenol	12	1.4	5.0	ug/L	4.9	ND	240	10-191			08/01/18	MS1.0 ***High***
2,4-Dinitrotoluene	5.3	0.50	2.5	ug/L	4.9	ND	107	39-139			08/01/18	
2,6-Dinitrotoluene	5.4	1.8	2.5	ug/L	4.9	ND	109	50-158			08/01/18	
2-Chloronaphthalene	3.7	0.50	2.5	ug/L	4.9	ND	76	60-118			08/01/18	
2-Chlorophenol	4.0	0.56	2.5	ug/L	4.9	ND	81	23-134			08/01/18	
2-Nitrophenol	4.4	1.1	2.5	ug/L	4.9	ND	90	29-182			08/01/18	
3,3-Dichlorobenzidine	ND	2.7	10	ug/L	20	ND	0	10-200			08/01/18	MS1.0 ***Low***
4,6-Dinitro-2-methylphenol	6.3	0.53	2.5	ug/L	4.9	ND	129	10-181			08/01/18	
4-Bromophenyl phenyl ether	3.5	0.50	2.5	ug/L	4.9	ND	72	53-127			08/01/18	
4-Chloro-3-methylphenol	4.3	0.50	2.5	ug/L	4.9	ND	88	22-147			08/01/18	
4-Chlorophenyl phenyl ether	3.7	1.2	2.5	ug/L	4.9	ND	75	25-158			08/01/18	
4-Nitrophenol	6.5	1.3	5.0	ug/L	4.9	ND	131	10-132			08/01/18	
Acenaphthene	0.091	0.020	0.050	ug/L	0.098	ND	93	47-145			08/01/18	
Acenaphthylene	0.077	0.011	0.050	ug/L	0.098	ND	79	33-145			08/01/18	
Anthracene	0.076	0.0098	0.050	ug/L	0.098	ND	77	27-133			08/01/18	
Benzidine	ND	7.0	25	ug/L	20	ND	0	10-200			08/01/18	MS1.0 ***Low***
Benzo(a)anthracene	0.075	0.011	0.050	ug/L	0.098	ND	76	33-143			08/01/18	
Benzo(a)pyrene	0.066	0.016	0.050	ug/L	0.098	ND	67	17-163			08/01/18	
Benzo(b)fluoranthene	0.099	0.010	0.050	ug/L	0.098	ND	101	24-159			08/01/18	
Benzo(g,h,i)perylene	0.038	0.019	0.050	ug/L	0.098	ND	39	10-200			08/01/18	J
Benzo(k)fluoranthene	0.080	0.014	0.050	ug/L	0.098	ND	82	11-162			08/01/18	
Bis(2-chloroethoxy)methane	4.1	0.50	2.5	ug/L	4.9	ND	84	33-184			08/01/18	
Bis(2-chloroethyl) ether	4.1	0.74	2.5	ug/L	4.9	ND	83	12-158			08/01/18	
Bis(2-chloroisopropyl) ether	4.5	0.63	2.5	ug/L	4.9	ND	92	36-166			08/01/18	
Bis(2-ethylhexyl) phthalate	3.0	1.5	5.0	ug/L	4.9	ND	62	10-158			08/01/18	J
Butyl benzyl phthalate	4.1	0.50	2.5	ug/L	4.9	ND	83	10-152			08/01/18	
Chrysene	0.078	0.0057	0.050	ug/L	0.098	ND	79	17-168			08/01/18	
Dibenzo(a,h)anthracene	0.048	0.016	0.050	ug/L	0.098	ND	49	10-200			08/01/18	J
Diethyl phthalate	4.4	0.50	2.5	ug/L	4.9	ND	89	10-114			08/01/18	
Dimethyl phthalate	4.3	0.50	2.5	ug/L	4.9	ND	87	10-112			08/01/18	
Di-n-butyl phthalate	4.9	0.68	2.5	ug/L	4.9	ND	99	10-118			08/01/18	
Di-n-octyl phthalate	3.1	0.53	2.5	ug/L	4.9	ND	64	10-146			08/01/18	
Fluoranthene	0.10	0.0061	0.050	ug/L	0.098	ND	104	26-137			08/01/18	
Fluorene	0.095	0.022	0.050	ug/L	0.098	ND	96	59-121			08/01/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A810615											Prepared: 7/25/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A810615-MS1), Source: A8G2848-01												
Hexachlorobenzene	2.9	0.76	2.5	ug/L	4.9	ND	59	10-152			08/01/18	
Hexachlorobutadiene	2.7	0.67	2.5	ug/L	4.9	ND	56	24-116			08/01/18	
Hexachlorocyclopentadiene	1.8	0.68	2.5	ug/L	4.9	ND	36	10-130			08/01/18	J
Indeno(1,2,3-cd)pyrene	0.046	0.013	0.050	ug/L	0.098	ND	47	10-171			08/01/18	J
Isophorone	4.2	0.57	2.5	ug/L	4.9	ND	85	21-196			08/01/18	
Naphthalene	0.52	0.014	0.050	ug/L	0.098	0.44	74	21-133			08/01/18	
Nitrobenzene	4.3	0.53	2.5	ug/L	4.9	ND	87	35-180			08/01/18	
N-Nitrosodimethylamine (NDMA)	3.6	2.4	2.5	ug/L	4.9	ND	73	10-130			08/01/18	
N-Nitrosodi-n-propylamine (NDPA)	4.2	0.51	2.5	ug/L	4.9	ND	86	10-200			08/01/18	
N-Nitrosodiphenylamine (as DPA)	3.6	1.2	2.5	ug/L	4.9	ND	73	10-130			08/01/18	
Pentachlorophenol	7.1	1.0	5.0	ug/L	4.9	ND	144	14-176			08/01/18	
Phenanthrene	0.13	0.012	0.050	ug/L	0.098	ND	128	54-120			08/01/18	MS1.0 ***High***
Phenol	4.2	0.50	2.5	ug/L	4.9	ND	86	10-112			08/01/18	
Pyrene	0.10	0.0072	0.050	ug/L	0.098	ND	105	52-115			08/01/18	
Surrogate: 2,4,6-Tribromophenol	*5.9*				*4.9*		*119*	*53-200*			08/01/18	
Surrogate: 2-Fluorobiphenyl	*4.3*				*4.9*		*87*	*40-127*			08/01/18	
Surrogate: 2-Fluorophenol	*4.0*				*4.9*		*81*	*42-123*			08/01/18	
Surrogate: Nitrobenzene-d5	*4.5*				*4.9*		*91*	*49-133*			08/01/18	
Surrogate: Phenol-d6	*4.2*				*4.9*		*86*	*52-125*			08/01/18	
Surrogate: p-Terphenyl-d14	*4.0*				*4.9*		*81*	*39-135*			08/01/18	

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Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-002	State of California - ELAP	2993
State of Oregon - NELAP	4119-002				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-17

A8G2848

07202018

Abalo1080

Turnaround: Standard
Due Date: 8/3/2018

Abalone Coast Analytical, Inc.

Printed: 7/20/2018 5:38:53PM

6.0, 5.0 #%

A8G2848 07/20/2018
Abalo1080 10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

Rush: 24 Hr | 48 Hr

Reference # R-41021

Client Full Name/ Business:	Address	City	State	Zip
City of Pismo Beach				
Bill To: **Same**				

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name: Hal Hix, Hailie Hix

Project:	**R/O Brine Analysis**
Contact Full Name:	**Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	~~1000~~ 1035 HH 07/19	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	~~24~~ 19	6x p/unp half gal, p/unp 1 liter ✓	-1
	0955 07/19	EPA 625, EPA, 608, EPA 624, TCDD Equivalents		~~20~~	6x Ag/unp, 3x p/HNO3 1 liter ✓	
	0950 07/19	Acute Tox:Silversides		24	3x VV/HCl, 1x VV/unp ✓	
	07/19 0945	3 Species Chronic Tox: Urchin, Kelp, Topsmelt			1x p/unp 5 gal ✓	
R/O Feed Water	0925 07/19	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, ✓ p/unp 1 liter ✓	-2
	0930 07/19	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x ✓ p/HNO3 1 liter ✓	
					3x VV/HCl, 1x ✓ VV/unp ✓	

Relinquished By:	Received By:	Received By:	Lab:
Hal Hix		Eric	BSMFAL
Date/Time: 07/19/18 1000	Date/Time: 7/19/18 1109	Date/Time: 7/19/18 1130	6/6, 5.0
Lab:	Lab:	Lab: &HR 7/19/18 1119	Lab:

Method Of Shipment:
Client ✓
Courier
Other:

Condition
Intact (y/n) yes
Sediment no
Temp. 18°C
On Ice **Yes** / No

TCR / 2xBOD

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile: ☐

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

A8G2848 07/20/2018
Abalo1080 10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No (NA)	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	Yes No (NA) Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	Yes (No)
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received — "_" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1	2			
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—	1C	1C			
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	P F					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F					
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	2C	3C			
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					7.20.18
NaOH + ZnAc (P)	pH > 9	P F					E
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C	6C			
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—	3V	3V			
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other:							
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Solids: Brass / Steel / Plastic Bag	—	—					

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: [illegible] @ [illegible] Labels checked by: [illegible] @ 1743 RUSH Paged by: _____ @ _____

External



A8G2848



CERES Analytical Laboratory, Inc.
4919 Windplay Dr, Suite 1, El Dorado Hills, CA 95762

July 30, 2018

Ceres ID: 12223

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on July 24, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8G2848.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date	&Time
12223-001	R/O Brine A8G2848-01	7/24/2018	7/19/2018	10:35
12223-002	R/O Feed Water A8G2848-02	7/24/2018	7/19/2018	9:30

Section II: Data Summary

EPA Method 1613B

Quality Assurance Sample Method Blank		Date Received: NA
	QC Batch #: 1827	Date Extracted: 7/26/2018
	Matrix: Waste Water	ZB-5MS Analysis: 7/28/2018
Project ID: A8G2848	Sample Size: 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 2.14	0.887	5.00	
12378-PeCDD	DL= 3.93	2.56	25.0	
123478-HxCDD	DL= 7.41	3.08	25.0	
123678-HxCDD	DL= 8.95	5.29	25.0	
123789-HxCDD	DL= 7.97	13.1	25.0	
1234678-HpCDD	DL= 8.34	5.15	25.0	
OCDD	DL= 17.4	8.50	50.0	
2,3,7,8-TCDF	DL= 1.79	0.733	5.00	
12378-PeCDF	DL= 3.61	2.96	25.0	
23478-PeCDF	DL= 3.20	5.40	25.0	
123478-HxCDF	DL= 2.49	3.93	25.0	
123678-HxCDF	DL= 2.67	2.94	25.0	
234678-HxCDF	DL= 2.78	4.32	25.0	
123789-HxCDF	DL= 4.16	4.70	25.0	
1234678-HpCDF	DL= 3.61	4.24	25.0	
1234789-HpCDF	DL= 5.60	5.74	25.0	
OCDF	DL= 12.6	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 2.14	
Total PeCDD	DL= 3.93	
Total HxCDD	DL= 8.95	
Total HpCDD	DL= 8.34	
Total TCDF	DL= 1.79	
Total PeCDF	DL= 3.61	
Total HxCDF	DL= 4.16	
Total HpCDF	DL= 5.60	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	109	25-164	
13C-12378-PeCDD	87.8	25-181	
13C-123478-HxCDD	89.2	32-141	
13C-123678-HxCDD	80.7	28-130	
13C-1234678-HpCDD	100	23-140	
13C-OCDD	80.3	17-157	
13C-2378-TCDF	102	24-169	
13C-12378-PeCDF	81.1	24-185	
13C-23478-PeCDF	83.1	21-178	
13C-123478-HxCDF	126	26-152	
13C-123678-HxCDF	121	26-123	
13C-234678-HxCDF	131	28-136	
13C-123789-HxCDF	118	29-147	
13C-1234678-HpCDF	109	28-143	
13C-1234789-HpCDF	99.3	26-138	

CRS

37Cl4-2378-TCDD	95.3	35-197

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery Project ID: A8G2848	QC Batch #: 1827 Matrix: Waste Water Sample Size: 1.000 L	Date Received: NA Date Extracted: 7/26/2018 ZB-5MS Analysis: 7/28/2018

Analyte	Conc. (ng/mL)	Limits (a)
2,3,7,8-TCDD	10.3	6.7-15.8
12378-PeCDD	50.6	35-71
123478-HxCDD	61.5	35-82
123678-HxCDD	63.9	38-67
123789-HxCDD	62.4	32-81
1234678-HpCDD	53.8	35-70
OCDD	117	78-144
2,3,7,8-TCDF	10.3	7.5-15.8
12378-PeCDF	50.3	40-67
23478-PeCDF	48.5	34-80
123478-HxCDF	49.7	36-67
123678-HxCDF	50.7	42-65
234678-HxCDF	50.9	35-78
123789-HxCDF	54.2	39-65
1234678-HpCDF	43.5	41-61
1234789-HpCDF	44.7	39-69
OCDF	112	63-170

Labeled Standards	% Rec.	Limits (a)
13C-2378-TCDD	109	20-175
13C-12378-PeCDD	116	21-227
13C-123478-HxCDD	86.4	21-193
13C-123678-HxCDD	85.3	25-163
13C-1234678-HpCDD	101	26-166
13C-OCDD	88.4	13-198
13C-2378-TCDF	121	22-152
13C-12378-PeCDF	108	21-192
13C-23478-PeCDF	97.6	13-328
13C-123478-HxCDF	111	19-202
13C-123678-HxCDF	113	21-159
13C-234678-HxCDF	100	22-176
13C-123789-HxCDF	98.1	17-205
13C-1234678-HpCDF	100	21-158
13C-1234789-HpCDF	93.8	20-186
CRS		
37Cl4-2378-TCDD	96.6	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Client Sample ID: R/O Brine A8G2848-01		
Project ID: A8G2848	**Ceres Sample ID:** 12223-001	**Date Received:** 7/24/2018
	QC Batch #: 1827	**Date Extracted:** 7/26/2018
Date Collected: 7/19/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 7/28/2018
Time Collected: 10:35	**Sample Size:** 0.987 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.35	0.887	5.07	
12378-PeCDD	DL= 5.47	2.56	25.3	
123478-HxCDD	DL= 8.19	3.08	25.3	
123678-HxCDD	DL= 8.62	5.29	25.3	
123789-HxCDD	DL= 8.22	13.1	25.3	
1234678-HpCDD	DL= 13.3	5.15	25.3	
OCDD	DL= 18.5	8.50	50.7	
2,3,7,8-TCDF	DL= 3.42	0.733	5.07	
12378-PeCDF	DL= 4.50	2.96	25.3	
23478-PeCDF	DL= 3.14	5.40	25.3	
123478-HxCDF	DL= 4.32	3.93	25.3	
123678-HxCDF	DL= 4.81	2.94	25.3	
234678-HxCDF	DL= 4.67	4.32	25.3	
123789-HxCDF	DL= 6.63	4.70	25.3	
1234678-HpCDF	DL= 8.57	4.24	25.3	
1234789-HpCDF	DL= 11.2	5.74	25.3	
OCDF	DL= 21.5	11.7	50.7	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	70.7	25-164	
13C-12378-PeCDD	55.6	25-181	
13C-123478-HxCDD	48.3	32-141	
13C-123678-HxCDD	62.8	28-130	
13C-1234678-HpCDD	55.2	23-140	
13C-OCDD	45.4	17-157	
13C-2378-TCDF	79.7	24-169	
13C-12378-PeCDF	44.3	24-185	
13C-23478-PeCDF	52.7	21-178	
13C-123478-HxCDF	75.0	26-152	
13C-123678-HxCDF	77.3	26-123	
13C-234678-HxCDF	79.1	28-136	
13C-123789-HxCDF	71.4	29-147	
13C-1234678-HpCDF	54.7	28-143	
13C-1234789-HpCDF	53.8	26-138	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.35	
Total PeCDD	DL= 5.47	
Total HxCDD	DL= 8.62	
Total HpCDD	DL= 13.3	
Total TCDF	DL= 3.42	
Total PeCDF	DL= 4.50	
Total HxCDF	DL= 6.63	
Total HpCDF	DL= 11.2	

CRS			
37Cl4-2378-TCDD	103	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Feed Water A8G2848-02		
Project ID: A8G2848	**Ceres Sample ID:** 12223-002	**Date Received:** 7/24/2018
	QC Batch #: 1827	**Date Extracted:** 7/26/2018
Date Collected: 7/19/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 7/28/2018
Time Collected: 9:30	**Sample Size:** 1.019 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 2.37	0.887	4.91	
12378-PeCDD	DL= 4.31	2.56	24.5	
123478-HxCDD	DL= 8.25	3.08	24.5	
123678-HxCDD	DL= 8.57	5.29	24.5	
123789-HxCDD	DL= 8.23	13.1	24.5	
1234678-HpCDD	DL= 11.4	5.15	24.5	
OCDD	DL= 24.9	8.50	49.1	
2,3,7,8-TCDF	DL= 2.91	0.733	4.91	
12378-PeCDF	DL= 5.03	2.96	24.5	
23478-PeCDF	DL= 4.33	5.40	24.5	
123478-HxCDF	DL= 3.79	3.93	24.5	
123678-HxCDF	DL= 3.91	2.94	24.5	
234678-HxCDF	DL= 4.23	4.32	24.5	
123789-HxCDF	DL= 5.97	4.70	24.5	
1234678-HpCDF	DL= 7.87	4.24	24.5	
1234789-HpCDF	DL= 8.37	5.74	24.5	
OCDF	DL= 18.6	11.7	49.1	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 2.37	
Total PeCDD	DL= 4.31	
Total HxCDD	DL= 8.57	
Total HpCDD	DL= 11.4	
Total TCDF	DL= 2.91	
Total PeCDF	DL= 5.03	
Total HxCDF	DL= 5.97	
Total HpCDF	DL= 8.37	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	58.8	25-164	
13C-12378-PeCDD	43.8	25-181	
13C-123478-HxCDD	40.8	32-141	
13C-123678-HxCDD	48.0	28-130	
13C-1234678-HpCDD	50.1	23-140	
13C-OCDD	35.3	17-157	
13C-2378-TCDF	67.6	24-169	
13C-12378-PeCDF	34.8	24-185	
13C-23478-PeCDF	38.2	21-178	
13C-123478-HxCDF	61.3	26-152	
13C-123678-HxCDF	66.7	26-123	
13C-234678-HxCDF	64.9	28-136	
13C-123789-HxCDF	59.2	29-147	
13C-1234678-HpCDF	38.9	28-143	
13C-1234789-HpCDF	47.4	26-138	

CRS

37Cl4-2378-TCDD	107	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8G2848

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I II III IV

Sample ID	Samp Desc			Sample Date
A8G2848-01	R/O Brine	Client Matrix	Water	07/19/2018 10:35
Lab Matrix:	Water			
Analysis:	(1) L AG W None			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			
A8G2848-02	R/O Feed Water	Client Matrix	Water	07/19/2018 09:30
Lab Matrix:	Water			
Analysis:	1			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			

Released By	Date	Received By	Date
	7/23/18		7/24/18 10:40
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: JK (initials)

Ceres ID: 12223	Date/Time: 7/24/18 10:40
Client Project ID: 1892848	Received Temp: 1.8 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?	(Y) / N
Chain of Custody Received by signed?	(Y) / N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	(NA)
Unlabeled / Illegible Samples	Y / (N)
Proper Containers:	(Y) / N
Preservation Acceptable (Chemical or Temperature)?	(Y) / N
Drinking Water, Sodium Thiosulfate present?	Y / N / (NA)
Residual Cl?	Y / (N)
Aqueous sample pH: 7.7	
List COC discrepancies: JK 7/24/18	
List Damaged Samples: JK 7/24/18	

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: August 14, 2018

Work Order Number: A8G2848

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8G2848-01 R/O Brine	07/17/18 (10:35)	Water	900.0 901.1	Gross Beta K-40	26.37 1054	± ±	3.51 258	2.20 537
A8G2848-02 R/O Feed Water	07/17/18 (09:30)	Water	900.0 901.1	Gross Beta K-40	6.40 252	± ±	1.10 228	2.10 523

Analyses Date: August 08, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	469.75 pCi	439.57 pCi	93.57	6.43	A
Gamma (Cs-137)	786.26 pCi	748.50 pCi	95.20	4.80	A

Flag:

A = result accepted, Bias ≤ 20%
N = result not acceptable, Bias > 20%

Patricia Davi

Patricia Davi
QA/QC Manager
Davi Laboratories

2507-27,28

BSK ASSOCIATES

SUBCONTRACT ORDER

A8G2848

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Davi Laboratories
730 Alfred Nobel Drive
Hercules, CA 94547-1805
Phone :(510) 724-9450
Fax: -
Turnaround (Days): Standard
QC Deliverables: I II III IV

Sample ID	Samp Desc		Sample Date
A8G2848-01	R/O Brine	Client Matrix Water	07/19/2018 10:35
Lab Matrix:	Water		
	Analysis: 1 L P NONE		
	EXT-Gross Beta		
	EXT-Miscellaneous 1 L P HNO3	Potassium-40 via EPA 901.1	
A8G2848-02	R/O Feed Water	Client Matrix Water	07/19/2018 09:30
Lab Matrix:	Water		
	Analysis: ↓		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	

Released By 7.23.18 Date Received By Date 7/24/18 1230

Released By Date Received By Date

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8G3857
8/16/2018
Invoice: A823761

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8G3857 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 7/31/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Michelle Kawaguchi

Michelle Kawaguchi, Project Manager

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-4803 City of Pismo Beach	**Project PO#:**	-
Received:	7/31/2018 - 10:00		
Report Due:	8/16/2018		

Sample Receipt Conditions

Cooler: Cooler #2
Temperature on Receipt ºC: 0.0

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Cooler: Default Cooler
Temperature on Receipt ºC: 1.6

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Detailed Narrative

Chain of Custody Notes

Date: 8/1/18
Initials: MKK
Note: Only highlighted items were tested for.

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
B2.2	Analyte detected in associated method blank below the reporting limit. Sample result may be attributable to ambient laboratory background.
BS	Blank spike recoveries did not meet acceptance limits.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
BS4.0	BS/BSD RPD exceeded the method acceptance limit as one of the blank spikes recovered outside limits.
J	Estimated value
MS.x	Matrix spike recovery exceeds lower control limit. Reported sample result may be biased low.
MS1.0	Matrix spike recoveries exceed control limits.
MS1.2	Matrix spike recovery exceeds lower control limit. Reported results for parent matrix should be considered estimated due to matrix interferences.
SR.x	Surrogate recovery exceeds upper control limit due to matrix interference as confirmed by re-analysis.
SR1.0	Surrogate recovery exceeds upper control limit. No material impact as associated analytes are Non-Detect.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

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Certificate of Analysis

Sample ID: A8G3857-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/27/18 - 09:00
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**8.7**		0.10	ug/L	1	A811433	08/08/18	08/12/18	
Copper	EPA 200.8 DRC	**17**		1.1	ug/L	1	A811433	08/08/18	08/10/18	
Nickel	EPA 200.8 DRC	**20**		1.0	ug/L	1	A811433	08/08/18	08/10/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A811018	08/01/18	08/03/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A811018	08/01/18	08/03/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A811018	08/01/18	08/03/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A811018	08/01/18	08/03/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A811018	08/01/18	08/03/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A811018	08/01/18	08/03/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A811018	08/01/18	08/03/18	
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A811018	08/01/18	08/03/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A811018	08/01/18	08/03/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A811018	08/01/18	08/03/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Surrogate: TCMX	EPA 608	82 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	**1.3**		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	

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Certificate of Analysis

Sample ID: A8G3857-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/27/18 - 09:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811265	08/03/18	08/03/18	
Acetone	EPA 624	**3.6**	1.4	20	ug/L	1	A811265	08/03/18	08/03/18	J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromodichloromethane	EPA 624	**1.6**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromomethane	EPA 624	**0.54**	0.19	1.0	ug/L	1	A811265	08/03/18	08/03/18	B2.2, J
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811265	08/03/18	08/03/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroform	EPA 624	**5.9**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloromethane	EPA 624	**0.73**	0.18	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Dibromochloromethane	EPA 624	**0.30**	0.085	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811265	08/03/18	08/03/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Ethylbenzene	EPA 624	**0.19**	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811265	08/03/18	08/03/18	
m,p-Xylenes	EPA 624	**0.76**	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
o-Xylene	EPA 624	**0.55**	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811265	08/03/18	08/03/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Toluene	EPA 624	**0.52**	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	101 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	103 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	99 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A811019	08/01/18	08/07/18	

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Certificate of Analysis

Sample ID: A8G3857-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/27/18 - 09:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A811019	08/01/18	08/07/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A811019	08/01/18	08/07/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A811019	08/01/18	08/07/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A811019	08/01/18	08/07/18	
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	BS2.0
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A811019	08/01/18	08/07/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A811019	08/01/18	08/07/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A811019	08/01/18	08/07/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A811019	08/01/18	08/07/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A811019	08/01/18	08/07/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A811019	08/01/18	08/07/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A811019	08/01/18	08/07/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A811019	08/01/18	08/07/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Naphthalene	EPA 625	**0.19**	0.027	0.20	ug/L	10	A811019	08/01/18	08/08/18	J
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A811019	08/01/18	08/07/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A811019	08/01/18	08/07/18	

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Certificate of Analysis

Sample ID: A8G3857-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 07/27/18 - 09:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	215 %		*Acceptable range: 53-200 %*			*Qualifiers - SR1.0*			
Surrogate: 2-Fluorobiphenyl	EPA 625	80 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	65 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	86 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	82 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	109 %		*Acceptable range: 39-135 %*						

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Certificate of Analysis

Sample ID: A8G3857-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/27/18 - 08:35
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**2.3**		0.10	ug/L	1	A811433	08/08/18	08/12/18	
Copper	EPA 200.8 DRC	**4.9**		1.1	ug/L	1	A811433	08/08/18	08/10/18	
Nickel	EPA 200.8 DRC	**5.4**		1.0	ug/L	1	A811433	08/08/18	08/10/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A811018	08/01/18	08/03/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A811018	08/01/18	08/03/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A811018	08/01/18	08/03/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A811018	08/01/18	08/03/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A811018	08/01/18	08/03/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A811018	08/01/18	08/03/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A811018	08/01/18	08/03/18	MS1.2
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A811018	08/01/18	08/03/18	MS1.2
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A811018	08/01/18	08/03/18	MS1.2
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A811018	08/01/18	08/03/18	MS1.2
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A811018	08/01/18	08/03/18	
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A811018	08/01/18	08/03/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A811018	08/01/18	08/03/18	
Surrogate: TCMX	EPA 608	81 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	

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Certificate of Analysis

Sample ID: A8G3857-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/27/18 - 08:35
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811265	08/03/18	08/03/18	
Acetone	EPA 624	ND	1.4	20	ug/L	1	A811265	08/03/18	08/03/18	
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromodichloromethane	EPA 624	**0.48**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromomethane	EPA 624	**0.38**	0.19	1.0	ug/L	1	A811265	08/03/18	08/03/18	B2.2, J
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811265	08/03/18	08/03/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroform	EPA 624	**1.5**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloromethane	EPA 624	**1.2**	0.18	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Dibromochloromethane	EPA 624	**0.14**	0.085	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811265	08/03/18	08/03/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Ethylbenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811265	08/03/18	08/03/18	
m,p-Xylenes	EPA 624	ND	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
o-Xylene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811265	08/03/18	08/03/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Toluene	EPA 624	**0.59**	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	100 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	99 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	99 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A811019	08/01/18	08/07/18	

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Certificate of Analysis

Sample ID: A8G3857-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/27/18 - 08:35
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A811019	08/01/18	08/07/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A811019	08/01/18	08/07/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A811019	08/01/18	08/07/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A811019	08/01/18	08/07/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A811019	08/01/18	08/07/18	
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A811019	08/01/18	08/07/18	MS.x
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	BS2.0
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A811019	08/01/18	08/07/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A811019	08/01/18	08/07/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A811019	08/01/18	08/07/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A811019	08/01/18	08/07/18	BS2.0, MS.x
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A811019	08/01/18	08/07/18	
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A811019	08/01/18	08/07/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A811019	08/01/18	08/07/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811019	08/01/18	08/07/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A811019	08/01/18	08/07/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A811019	08/01/18	08/07/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A811019	08/01/18	08/07/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A811019	08/01/18	08/07/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Naphthalene	EPA 625	**0.063**	0.0027	0.20	ug/L	1	A811019	08/01/18	08/07/18	J
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A811019	08/01/18	08/07/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A811019	08/01/18	08/07/18	

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Certificate of Analysis

Sample ID: A8G3857-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 07/27/18 - 08:35
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A811019	08/01/18	08/07/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A811019	08/01/18	08/07/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A811019	08/01/18	08/07/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	212 %		*Acceptable range: 53-200 %*			*Qualifiers - SR1.0*			
Surrogate: 2-Fluorobiphenyl	EPA 625	80 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	75 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	85 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	93 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	93 %		*Acceptable range: 39-135 %*						

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BSK Associates Laboratory Fresno

Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A811433											Prepared: 8/8/2018	
Prep Method: EPA 200.2 DRC											Analyst: MAS	
Blank (A811433-BLK1)												
Copper	ND		1.1	ug/L							08/10/18	
Nickel	ND		1.0	ug/L							08/10/18	
Blank (A811433-BLK2)												
Arsenic	ND		0.10	ug/L							08/12/18	
Blank Spike (A811433-BS1)												
Copper	50		1.1	ug/L	50		101	85-115			08/10/18	
Nickel	51		1.0	ug/L	50		102	85-115			08/10/18	
Blank Spike (A811433-BS2)												
Arsenic	48		0.10	ug/L	50		96	85-115			08/12/18	
Blank Spike Dup (A811433-BSD1)												
Copper	50		1.1	ug/L	50		100	85-115	0	20	08/10/18	
Nickel	51		1.0	ug/L	50		102	85-115	0	20	08/10/18	
Blank Spike Dup (A811433-BSD2)												
Arsenic	48		0.10	ug/L	50		95	85-115	1	20	08/12/18	
Matrix Spike (A811433-MS1), Source: A8G3857-02												
Copper	48		1.1	ug/L	50	4.9	86	70-130			08/10/18	
Nickel	52		1.0	ug/L	50	5.4	93	70-130			08/10/18	
Matrix Spike (A811433-MS2), Source: A8H0662-02												
Copper	44		1.1	ug/L	50	2.6	83	70-130			08/10/18	
Nickel	51		1.0	ug/L	50	6.2	90	70-130			08/10/18	
Matrix Spike (A811433-MS3), Source: A8G3857-02												
Arsenic	50		0.10	ug/L	50	2.3	96	70-130			08/12/18	
Matrix Spike Dup (A811433-MSD1), Source: A8G3857-02												
Copper	48		1.1	ug/L	50	4.9	85	70-130	0	20	08/10/18	
Nickel	51		1.0	ug/L	50	5.4	92	70-130	1	20	08/10/18	
Matrix Spike Dup (A811433-MSD2), Source: A8H0662-02												
Copper	45		1.1	ug/L	50	2.6	84	70-130	1	20	08/10/18	
Nickel	51		1.0	ug/L	50	6.2	90	70-130	0	20	08/10/18	
Matrix Spike Dup (A811433-MSD3), Source: A8G3857-02												
Arsenic	51		0.10	ug/L	50	2.3	97	70-130	1	20	08/12/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A811018											Prepared: 8/1/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank (A811018-BLK1)												
4,4'-DDD	ND	0.00072	0.0050	ug/L							08/03/18	
4,4'-DDE	ND	0.00061	0.0050	ug/L							08/03/18	
4,4'-DDT	ND	0.00070	0.0050	ug/L							08/03/18	
Aldrin	ND	0.00079	0.0050	ug/L							08/03/18	
alpha-BHC	ND	0.0025	0.0050	ug/L							08/03/18	
Aroclor-1016	ND	0.050	0.10	ug/L							08/03/18	
Aroclor-1221	ND	0.063	0.10	ug/L							08/03/18	
Aroclor-1232	ND	0.050	0.10	ug/L							08/03/18	
Aroclor-1242	ND	0.050	0.10	ug/L							08/03/18	
Aroclor-1248	ND	0.020	0.10	ug/L							08/03/18	
Aroclor-1254	ND	0.050	0.10	ug/L							08/03/18	
Aroclor-1260	ND	0.015	0.10	ug/L							08/03/18	
beta-BHC	ND	0.00054	0.0050	ug/L							08/03/18	
Chlordane	ND	0.026	0.10	ug/L							08/03/18	
delta-BHC	ND	0.00060	0.0050	ug/L							08/03/18	
Dieldrin	ND	0.00097	0.0050	ug/L							08/03/18	
Endosulfan I	ND	0.00089	0.0050	ug/L							08/03/18	
Endosulfan II	ND	0.0018	0.0050	ug/L							08/03/18	
Endosulfan Sulfate	ND	0.00074	0.0050	ug/L							08/03/18	
Endrin	ND	0.00081	0.0050	ug/L							08/03/18	
Endrin Aldehyde	ND	0.00067	0.0050	ug/L							08/03/18	
Heptachlor	ND	0.00069	0.010	ug/L							08/03/18	
Heptachlor Epoxide	ND	0.00069	0.0050	ug/L							08/03/18	
Lindane	ND	0.0025	0.0050	ug/L							08/03/18	
Toxaphene	ND	0.035	0.10	ug/L							08/03/18	
Surrogate: TCMX	*0.25*				*0.30*		*83*	*26-144*			08/03/18	
Blank Spike (A811018-BS1)												
4,4'-DDD	0.040	0.00072	0.0050	ug/L	0.040		101	63-146			08/03/18	
4,4'-DDE	0.040	0.00061	0.0050	ug/L	0.040		100	49-150			08/03/18	
4,4'-DDT	0.038	0.00070	0.0050	ug/L	0.040		95	66-146			08/03/18	
Aldrin	0.037	0.00079	0.0050	ug/L	0.040		93	24-144			08/03/18	
alpha-BHC	0.038	0.0025	0.0050	ug/L	0.040		94	32-176			08/03/18	
beta-BHC	0.038	0.00054	0.0050	ug/L	0.040		94	59-152			08/03/18	
delta-BHC	0.039	0.00060	0.0050	ug/L	0.040		98	46-156			08/03/18	
Dieldrin	0.039	0.00097	0.0050	ug/L	0.040		97	62-146			08/03/18	
Endosulfan I	0.040	0.00089	0.0050	ug/L	0.040		100	53-151			08/03/18	
Endosulfan II	0.039	0.0018	0.0050	ug/L	0.040		98	63-144			08/03/18	
Endosulfan Sulfate	0.040	0.00074	0.0050	ug/L	0.040		99	65-145			08/03/18	
Endrin	0.035	0.00081	0.0050	ug/L	0.040		89	55-153			08/03/18	
Endrin Aldehyde	0.037	0.00067	0.0050	ug/L	0.040		93	68-128			08/03/18	
Heptachlor	0.046	0.00069	0.010	ug/L	0.040		114	34-147			08/03/18	
Heptachlor Epoxide	0.040	0.00069	0.0050	ug/L	0.040		99	57-150			08/03/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A811018											Prepared: 8/1/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank Spike (A811018-BS1)												
Lindane	0.037	0.0025	0.0050	ug/L	0.040		93	58-148			08/03/18	
Surrogate: TCMX	*0.24*				*0.30*		*81*	*26-144*			08/03/18	
Blank Spike Dup (A811018-BSD1)												
4,4'-DDD	0.040	0.00072	0.0050	ug/L	0.040		99	63-146	2	20	08/03/18	
4,4'-DDE	0.039	0.00061	0.0050	ug/L	0.040		98	49-150	2	20	08/03/18	
4,4'-DDT	0.037	0.00070	0.0050	ug/L	0.040		93	66-146	1	20	08/03/18	
Aldrin	0.037	0.00079	0.0050	ug/L	0.040		93	24-144	1	20	08/03/18	
alpha-BHC	0.037	0.0025	0.0050	ug/L	0.040		92	32-176	3	20	08/03/18	
beta-BHC	0.038	0.00054	0.0050	ug/L	0.040		95	59-152	1	20	08/03/18	
delta-BHC	0.039	0.00060	0.0050	ug/L	0.040		98	46-156	0	20	08/03/18	
Dieldrin	0.039	0.00097	0.0050	ug/L	0.040		96	62-146	1	20	08/03/18	
Endosulfan I	0.040	0.00089	0.0050	ug/L	0.040		99	53-151	1	20	08/03/18	
Endosulfan II	0.041	0.0018	0.0050	ug/L	0.040		102	63-144	4	20	08/03/18	
Endosulfan Sulfate	0.039	0.00074	0.0050	ug/L	0.040		97	65-145	2	20	08/03/18	
Endrin	0.036	0.00081	0.0050	ug/L	0.040		90	55-153	1	20	08/03/18	
Endrin Aldehyde	0.037	0.00067	0.0050	ug/L	0.040		93	68-128	1	20	08/03/18	
Heptachlor	0.044	0.00069	0.010	ug/L	0.040		110	34-147	4	20	08/03/18	
Heptachlor Epoxide	0.038	0.00069	0.0050	ug/L	0.040		96	57-150	4	20	08/03/18	
Lindane	0.035	0.0025	0.0050	ug/L	0.040		88	58-148	6	20	08/03/18	
Surrogate: TCMX	*0.25*				*0.30*		*82*	*26-144*			08/03/18	
Matrix Spike (A811018-MS1), Source: A8G3857-02												
4,4'-DDD	0.027	0.00072	0.0050	ug/L	0.040	ND	68	63-146			08/03/18	
4,4'-DDE	0.033	0.00061	0.0050	ug/L	0.040	ND	81	49-150			08/03/18	
4,4'-DDT	0.032	0.00070	0.0050	ug/L	0.040	ND	79	66-146			08/03/18	
Aldrin	0.040	0.00079	0.0050	ug/L	0.040	ND	99	24-144			08/03/18	
alpha-BHC	0.031	0.0025	0.0050	ug/L	0.040	ND	77	32-176			08/03/18	
beta-BHC	0.028	0.00054	0.0050	ug/L	0.040	ND	70	59-152			08/03/18	
delta-BHC	ND	0.00060	0.0050	ug/L	0.040	ND	0	46-156			08/03/18	MS1.0 ***Low***
Dieldrin	0.029	0.00097	0.0050	ug/L	0.040	ND	73	62-146			08/03/18	
Endosulfan I	ND	0.00089	0.0050	ug/L	0.040	ND	0	53-151			08/03/18	MS1.0 ***Low***
Endosulfan II	0.034	0.0018	0.0050	ug/L	0.040	ND	83	63-144			08/03/18	
Endosulfan Sulfate	ND	0.00074	0.0050	ug/L	0.040	ND	0	65-145			08/03/18	MS1.0 ***Low***
Endrin	0.037	0.00081	0.0050	ug/L	0.040	ND	92	55-153			08/03/18	
Endrin Aldehyde	ND	0.00067	0.0050	ug/L	0.040	ND	0	68-128			08/03/18	MS1.0 ***Low***
Heptachlor	0.031	0.00069	0.0050	ug/L	0.040	ND	76	34-147			08/03/18	
Heptachlor Epoxide	0.032	0.00069	0.0050	ug/L	0.040	ND	79	57-150			08/03/18	
Lindane	0.037	0.0025	0.0050	ug/L	0.040	ND	92	58-148			08/03/18	
Surrogate: TCMX	*0.25*				*0.30*		*82*	*26-144*			08/03/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811265-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							08/03/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							08/03/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							08/03/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							08/03/18	
1,1-Dichloroethene	ND	0.12	0.50	ug/L							08/03/18	
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							08/03/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							08/03/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							08/03/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							08/03/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							08/03/18	
2-Butanone	ND	1.2	20	ug/L							08/03/18	
2-Hexanone	ND	1.2	20	ug/L							08/03/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							08/03/18	
Acetone	ND	1.4	5.0	ug/L							08/03/18	
Benzene	ND	0.15	0.50	ug/L							08/03/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							08/03/18	
Bromoform	ND	0.14	0.50	ug/L							08/03/18	
Bromomethane	0.36	0.19	1.0	ug/L							08/03/18	B2.0, J
Carbon disulfide	ND	1.6	5.0	ug/L							08/03/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							08/03/18	
Chlorobenzene	ND	0.13	0.50	ug/L							08/03/18	
Chloroethane	ND	0.13	0.50	ug/L							08/03/18	
Chloroform	ND	0.10	0.50	ug/L							08/03/18	
Chloromethane	ND	0.18	0.50	ug/L							08/03/18	
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							08/03/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							08/03/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							08/03/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							08/03/18	
Dichloromethane	ND	0.11	0.50	ug/L							08/03/18	
Ethylbenzene	ND	0.13	0.50	ug/L							08/03/18	
Hexachloroethane	ND	0.15	1.0	ug/L							08/03/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							08/03/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							08/03/18	
o-Xylene	ND	0.12	0.50	ug/L							08/03/18	
Styrene	ND	0.16	0.50	ug/L							08/03/18	
Tetrachloroethene (PCE)	ND	0.11	0.50	ug/L							08/03/18	
Toluene	ND	0.14	0.50	ug/L							08/03/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							08/03/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							08/03/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							08/03/18	
Trichlorofluoromethane	ND	0.12	0.50	ug/L							08/03/18	
Vinyl Chloride	ND	0.15	0.50	ug/L							08/03/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811265-BLK1)												
Surrogate: 1,2-Dichloroethane-d4	*49*				*50*		*98*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*52*				*50*		*104*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*49*				*50*		*97*	*70-130*			08/03/18	
Blank Spike (A811265-BS1)												
1,1,1-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-162			08/03/18	
1,1,2,2-Tetrachloroethane	9.1	0.12	0.50	ug/L	10		91	46-157			08/03/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		101	52-150			08/03/18	
1,1-Dichloroethane	9.9	0.11	0.50	ug/L	10		99	59-155			08/03/18	
1,1-Dichloroethene	10	0.12	0.50	ug/L	10		104	10-234			08/03/18	
1,2-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190			08/03/18	
1,2-Dichloroethane	9.8	0.10	0.50	ug/L	10		98	49-155			08/03/18	
1,2-Dichloropropane	9.9	0.12	0.50	ug/L	10		99	10-210			08/03/18	
1,3-Dichlorobenzene	9.7	0.11	0.50	ug/L	10		97	59-156			08/03/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		100	18-190			08/03/18	
2-Butanone	9.1	1.2	20	ug/L	10		91	46-156			08/03/18	J
2-Hexanone	10	1.2	20	ug/L	10		102	56-135			08/03/18	J
4-Methyl-2-pentanone	9.6	0.97	20	ug/L	10		96	67-136			08/03/18	J
Acetone	10	1.4	5.0	ug/L	10		101	19-194			08/03/18	
Benzene	9.9	0.15	0.50	ug/L	10		99	37-151			08/03/18	
Bromodichloromethane	9.7	0.10	0.50	ug/L	10		97	35-155			08/03/18	
Bromoform	9.9	0.14	0.50	ug/L	10		99	45-169			08/03/18	
Bromomethane	12	0.19	1.0	ug/L	10		116	10-242			08/03/18	
Carbon disulfide	10	1.6	5.0	ug/L	10		103	78-140			08/03/18	
Carbon Tetrachloride	9.4	0.10	0.50	ug/L	10		94	70-140			08/03/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		102	37-160			08/03/18	
Chloroethane	10	0.13	0.50	ug/L	10		100	14-230			08/03/18	
Chloroform	10	0.10	0.50	ug/L	10		102	51-138			08/03/18	
Chloromethane	12	0.18	0.50	ug/L	10		116	10-273			08/03/18	
cis-1,2-Dichloroethene	9.9	0.10	0.50	ug/L	10		99	81-130			08/03/18	
cis-1,3-Dichloropropene	9.8	0.11	0.50	ug/L	10		98	10-227			08/03/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		100	53-149			08/03/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		106	52-171			08/03/18	
Dichloromethane	9.7	0.11	0.50	ug/L	10		97	10-221			08/03/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		104	37-162			08/03/18	
Hexachloroethane	11	0.15	1.0	ug/L	10		107	78-145			08/03/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		103	83-108			08/03/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20		98	79-131			08/03/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115			08/03/18	
Styrene	10	0.16	0.50	ug/L	10		100	78-117			08/03/18	
Tetrachloroethene (PCE)	14	0.11	0.50	ug/L	10		139	64-148			08/03/18	
Toluene	10	0.14	0.50	ug/L	10		103	47-150			08/03/18	
trans-1,2-Dichloroethene	9.9	0.13	0.50	ug/L	10		99	54-156			08/03/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A811265-BS1)												
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		100	17-183			08/03/18	
Trichloroethene (TCE)	9.7	0.13	0.50	ug/L	10		97	71-157			08/03/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		105	17-181			08/03/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10		106	10-251			08/03/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*52*				*50*		*103*	*70-130*			08/03/18	
Blank Spike Dup (A811265-BSD1)												
1,1,1-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-162	0	30	08/03/18	
1,1,2,2-Tetrachloroethane	9.5	0.12	0.50	ug/L	10		95	46-157	4	30	08/03/18	
1,1,2-Trichloroethane	9.6	0.14	0.50	ug/L	10		96	52-150	5	30	08/03/18	
1,1-Dichloroethane	9.9	0.11	0.50	ug/L	10		99	59-155	0	30	08/03/18	
1,1-Dichloroethene	10	0.12	0.50	ug/L	10		103	10-234	1	30	08/03/18	
1,2-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190	0	30	08/03/18	
1,2-Dichloroethane	9.8	0.10	0.50	ug/L	10		98	49-155	0	30	08/03/18	
1,2-Dichloropropane	9.9	0.12	0.50	ug/L	10		99	10-210	0	30	08/03/18	
1,3-Dichlorobenzene	9.3	0.11	0.50	ug/L	10		93	59-156	4	30	08/03/18	
1,4-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190	1	30	08/03/18	
2-Butanone	9.7	1.2	20	ug/L	10		97	46-156	6	30	08/03/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135	3	30	08/03/18	J
4-Methyl-2-pentanone	9.9	0.97	20	ug/L	10		99	67-136	3	30	08/03/18	J
Acetone	10	1.4	5.0	ug/L	10		105	19-194	3	30	08/03/18	
Benzene	9.8	0.15	0.50	ug/L	10		98	37-151	1	30	08/03/18	
Bromodichloromethane	9.8	0.10	0.50	ug/L	10		98	35-155	1	30	08/03/18	
Bromoform	10	0.14	0.50	ug/L	10		101	45-169	2	30	08/03/18	
Bromomethane	12	0.19	1.0	ug/L	10		120	10-242	3	30	08/03/18	
Carbon disulfide	10	1.6	5.0	ug/L	10		102	78-140	1	30	08/03/18	
Carbon Tetrachloride	9.3	0.10	0.50	ug/L	10		93	70-140	1	30	08/03/18	
Chlorobenzene	9.9	0.13	0.50	ug/L	10		99	37-160	4	30	08/03/18	
Chloroethane	9.9	0.13	0.50	ug/L	10		99	14-230	0	30	08/03/18	
Chloroform	9.6	0.10	0.50	ug/L	10		96	51-138	6	30	08/03/18	
Chloromethane	11	0.18	0.50	ug/L	10		110	10-273	5	30	08/03/18	
cis-1,2-Dichloroethene	9.9	0.10	0.50	ug/L	10		99	81-130	0	30	08/03/18	
cis-1,3-Dichloropropene	9.8	0.11	0.50	ug/L	10		98	10-227	0	30	08/03/18	
Dibromochloromethane	9.6	0.085	0.50	ug/L	10		96	53-149	4	30	08/03/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		105	52-171	1	30	08/03/18	
Dichloromethane	9.7	0.11	0.50	ug/L	10		97	10-221	1	30	08/03/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		101	37-162	3	30	08/03/18	
Hexachloroethane	11	0.15	1.0	ug/L	10		106	78-145	1	30	08/03/18	
m,p-Xylenes	20	0.22	0.50	ug/L	20		99	83-108	4	30	08/03/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20		98	79-131	0	30	08/03/18	
o-Xylene	9.9	0.12	0.50	ug/L	10		99	81-115	4	30	08/03/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A811265-BSD1)												
Styrene	9.6	0.16	0.50	ug/L	10		96	78-117	5	30	08/03/18	
Tetrachloroethene (PCE)	13	0.11	0.50	ug/L	10		130	64-148	7	30	08/03/18	
Toluene	9.8	0.14	0.50	ug/L	10		98	47-150	5	30	08/03/18	
trans-1,2-Dichloroethene	9.9	0.13	0.50	ug/L	10		99	54-156	1	30	08/03/18	
trans-1,3-Dichloropropene	9.7	0.12	0.50	ug/L	10		97	17-183	4	30	08/03/18	
Trichloroethene (TCE)	9.4	0.13	0.50	ug/L	10		94	71-157	3	30	08/03/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		105	17-181	0	30	08/03/18	
Vinyl Chloride	10	0.15	0.50	ug/L	10		105	10-251	1	30	08/03/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*101*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*50*				*50*		*100*	*70-130*			08/03/18	
Matrix Spike (A811265-MS1), Source: A8H0445-01												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10	ND	115	52-162			08/03/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10	ND	101	46-157			08/03/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	100	52-150			08/03/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10	ND	110	59-155			08/03/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10	ND	119	10-234			08/03/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	104	18-190			08/03/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10	ND	106	49-155			08/03/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10	ND	109	10-210			08/03/18	
1,3-Dichlorobenzene	11	0.11	0.50	ug/L	10	ND	110	59-156			08/03/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	104	18-190			08/03/18	
2-Butanone	9.2	1.2	20	ug/L	10	ND	92	46-156			08/03/18	J
2-Hexanone	10	1.2	20	ug/L	10	ND	100	56-135			08/03/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10	ND	107	67-136			08/03/18	J
Acetone	16	1.4	5.0	ug/L	10	7.5	87	19-194			08/03/18	
Benzene	11	0.15	0.50	ug/L	10	ND	110	37-151			08/03/18	
Bromodichloromethane	10	0.10	0.50	ug/L	10	ND	105	35-155			08/03/18	
Bromoform	9.7	0.14	0.50	ug/L	10	ND	97	45-169			08/03/18	
Bromomethane	6.9	0.19	1.0	ug/L	10	ND	69	10-242			08/03/18	
Carbon disulfide	11	1.6	5.0	ug/L	10	ND	110	78-140			08/03/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10	ND	110	70-140			08/03/18	
Chlorobenzene	10	0.13	0.50	ug/L	10	ND	105	37-160			08/03/18	
Chloroethane	11	0.13	0.50	ug/L	10	ND	113	14-230			08/03/18	
Chloroform	10	0.10	0.50	ug/L	10	ND	100	51-138			08/03/18	
Chloromethane	11	0.18	0.50	ug/L	10	0.21	110	10-273			08/03/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10	ND	108	81-130			08/03/18	
cis-1,3-Dichloropropene	10	0.11	0.50	ug/L	10	ND	101	10-227			08/03/18	
Dibromochloromethane	9.9	0.085	0.50	ug/L	10	ND	99	53-149			08/03/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10	0.15	108	52-171			08/03/18	
Dichloromethane	11	0.11	0.50	ug/L	10	ND	106	10-221			08/03/18	
Ethylbenzene	11	0.13	0.50	ug/L	10	ND	109	37-162			08/03/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A811265-MS1), Source: A8H0445-01												
Hexachloroethane	15	0.15	1.0	ug/L	10	0.37	144	78-145			08/03/18	
m,p-Xylenes	22	0.22	0.50	ug/L	20	0.26	106	83-108			08/03/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20	ND	102	79-131			08/03/18	
o-Xylene	11	0.12	0.50	ug/L	10	ND	105	81-115			08/03/18	
Styrene	10	0.16	0.50	ug/L	10	ND	101	78-117			08/03/18	
Tetrachloroethene (PCE)	9.8	0.11	0.50	ug/L	10	ND	98	64-148			08/03/18	
Toluene	11	0.14	0.50	ug/L	10	0.38	107	47-150			08/03/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10	ND	112	54-156			08/03/18	
trans-1,3-Dichloropropene	9.6	0.12	0.50	ug/L	10	ND	96	17-183			08/03/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10	ND	107	71-157			08/03/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10	0.16	116	17-181			08/03/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10	ND	114	10-251			08/03/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*100*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*49*				*50*		*97*	*70-130*			08/03/18	
EPA 625 - Quality Control												
Batch: A811019											Prepared: 8/1/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A811019-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	0.50	ug/L							08/06/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	0.50	ug/L							08/06/18	
2,4,6-Trichlorophenol	ND	0.14	0.50	ug/L							08/06/18	
2,4-Dichlorophenol	ND	0.10	0.50	ug/L							08/06/18	
2,4-Dimethylphenol	ND	0.15	0.50	ug/L							08/06/18	
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							08/06/18	
2,4-Dinitrotoluene	ND	0.10	0.50	ug/L							08/06/18	
2,6-Dinitrotoluene	ND	0.36	0.50	ug/L							08/06/18	
2-Chloronaphthalene	ND	0.10	0.50	ug/L							08/06/18	
2-Chlorophenol	ND	0.11	0.50	ug/L							08/06/18	
2-Nitrophenol	ND	0.21	0.50	ug/L							08/06/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L							08/06/18	
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							08/06/18	
4-Bromophenyl phenyl ether	ND	0.10	0.50	ug/L							08/06/18	
4-Chloro-3-methylphenol	ND	0.10	0.50	ug/L							08/06/18	
4-Chlorophenyl phenyl ether	ND	0.23	0.50	ug/L							08/06/18	
4-Nitrophenol	ND	0.26	1.0	ug/L							08/06/18	
Acenaphthene	ND	0.0040	0.010	ug/L							08/06/18	
Acenaphthylene	ND	0.0023	0.010	ug/L							08/06/18	
Anthracene	ND	0.0020	0.010	ug/L							08/06/18	
Benzidine	ND	1.4	5.0	ug/L							08/06/18	
Benzo(a)anthracene	ND	0.0023	0.010	ug/L							08/06/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811019											Prepared: 8/1/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A811019-BLK1)												
Benzo(a)pyrene	ND	0.0033	0.010	ug/L							08/06/18	
Benzo(b)fluoranthene	ND	0.0021	0.010	ug/L							08/06/18	
Benzo(g,h,i)perylene	ND	0.0039	0.010	ug/L							08/06/18	
Benzo(k)fluoranthene	ND	0.0028	0.010	ug/L							08/06/18	
Bis(2-chloroethoxy)methane	ND	0.10	0.50	ug/L							08/06/18	
Bis(2-chloroethyl) ether	ND	0.15	0.50	ug/L							08/06/18	
Bis(2-chloroisopropyl) ether	ND	0.13	0.50	ug/L							08/06/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	1.0	ug/L							08/06/18	
Butyl benzyl phthalate	ND	0.10	0.50	ug/L							08/06/18	
Chrysene	ND	0.0011	0.010	ug/L							08/06/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.010	ug/L							08/06/18	
Diethyl phthalate	ND	0.10	0.50	ug/L							08/06/18	
Dimethyl phthalate	ND	0.10	0.50	ug/L							08/06/18	
Di-n-butyl phthalate	ND	0.14	0.50	ug/L							08/06/18	
Di-n-octyl phthalate	ND	0.11	0.50	ug/L							08/06/18	
Fluoranthene	ND	0.0012	0.010	ug/L							08/06/18	
Fluorene	ND	0.0043	0.010	ug/L							08/06/18	
Hexachlorobenzene	ND	0.15	0.50	ug/L							08/06/18	
Hexachlorobutadiene	ND	0.13	0.50	ug/L							08/06/18	
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L							08/06/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.010	ug/L							08/06/18	
Isophorone	ND	0.11	0.50	ug/L							08/06/18	
Naphthalene	ND	0.0027	0.010	ug/L							08/06/18	
Nitrobenzene	ND	0.11	0.50	ug/L							08/06/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	0.50	ug/L							08/06/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	0.50	ug/L							08/06/18	
N-Nitrosodiphenylamine (as DPA)	ND	0.24	0.50	ug/L							08/06/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							08/06/18	
Phenanthrene	ND	0.0024	0.010	ug/L							08/06/18	
Phenol	ND	0.10	0.50	ug/L							08/06/18	
Pyrene	ND	0.0014	0.010	ug/L							08/06/18	
Surrogate: 2,4,6-Tribromophenol	*6.7*				*5.0*		*135*	*53-200*			08/06/18	
Surrogate: 2-Fluorobiphenyl	*4.1*				*5.0*		*83*	*40-127*			08/06/18	
Surrogate: 2-Fluorophenol	*3.9*				*5.0*		*78*	*42-123*			08/06/18	
Surrogate: Nitrobenzene-d5	*3.0*				*5.0*		*59*	*49-133*			08/06/18	
Surrogate: Phenol-d6	*4.8*				*5.0*		*96*	*52-125*			08/06/18	
Surrogate: p-Terphenyl-d14	*4.6*				*5.0*		*93*	*39-135*			08/06/18	
Blank Spike (A811019-BS1)												
1,2,4-Trichlorobenzene	3.3	0.10	0.50	ug/L	5.0		66	44-142			08/07/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.7	0.10	0.50	ug/L	5.0		74	30-130			08/07/18	
2,4,6-Trichlorophenol	4.6	0.14	0.50	ug/L	5.0		92	37-144			08/07/18	
2,4-Dichlorophenol	4.3	0.10	0.50	ug/L	5.0		85	39-135			08/07/18	
2,4-Dimethylphenol	1.6	0.15	0.50	ug/L	5.0		31	10-175			08/07/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A811019											Prepared: 8/1/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike (A811019-BS1)													
2,4-Dinitrophenol	3.8	0.27	1.0	ug/L	5.0		77	10-191			08/07/18		
2,4-Dinitrotoluene	4.7	0.10	0.50	ug/L	5.0		93	39-139			08/07/18		
2,6-Dinitrotoluene	4.6	0.36	0.50	ug/L	5.0		93	50-158			08/07/18		
2-Chloronaphthalene	4.1	0.10	0.50	ug/L	5.0		83	60-118			08/07/18		
2-Chlorophenol	3.8	0.11	0.50	ug/L	5.0		76	23-134			08/07/18		
2-Nitrophenol	3.9	0.21	0.50	ug/L	5.0		79	29-182			08/07/18		
3,3-Dichlorobenzidine	6.6	0.54	2.0	ug/L	20		33	10-200			08/07/18		
4,6-Dinitro-2-methylphenol	3.0	0.11	0.50	ug/L	5.0		60	10-181			08/07/18		
4-Bromophenyl phenyl ether	4.5	0.10	0.50	ug/L	5.0		89	53-127			08/07/18		
4-Chloro-3-methylphenol	0.12	0.10	0.50	ug/L	5.0		2	22-147			08/07/18	BS, J	***Low***
4-Chlorophenyl phenyl ether	4.3	0.23	0.50	ug/L	5.0		86	25-158			08/07/18		
4-Nitrophenol	4.7	0.26	1.0	ug/L	5.0		94	10-132			08/07/18		
Acenaphthene	0.086	0.0040	0.010	ug/L	0.10		86	47-145			08/07/18		
Acenaphthylene	0.070	0.0023	0.010	ug/L	0.10		70	33-145			08/07/18		
Anthracene	0.078	0.0020	0.010	ug/L	0.10		78	27-133			08/07/18		
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			08/07/18	BS	***Low***
Benzo(a)anthracene	0.090	0.0023	0.010	ug/L	0.10		90	33-143			08/07/18		
Benzo(a)pyrene	0.068	0.0033	0.010	ug/L	0.10		68	17-163			08/07/18		
Benzo(b)fluoranthene	0.10	0.0021	0.010	ug/L	0.10		102	24-159			08/07/18		
Benzo(g,h,i)perylene	0.081	0.0039	0.010	ug/L	0.10		81	10-200			08/07/18		
Benzo(k)fluoranthene	0.088	0.0028	0.010	ug/L	0.10		88	11-162			08/07/18		
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0		88	33-184			08/07/18		
Bis(2-chloroethyl) ether	4.5	0.15	0.50	ug/L	5.0		89	12-158			08/07/18		
Bis(2-chloroisopropyl) ether	4.4	0.13	0.50	ug/L	5.0		87	36-166			08/07/18		
Bis(2-ethylhexyl) phthalate	4.3	0.29	1.0	ug/L	5.0		87	10-158			08/07/18		
Butyl benzyl phthalate	2.9	0.10	0.50	ug/L	5.0		59	10-152			08/07/18		
Chrysene	0.090	0.0011	0.010	ug/L	0.10		90	17-168			08/07/18		
Dibenzo(a,h)anthracene	0.095	0.0031	0.010	ug/L	0.10		95	10-200			08/07/18		
Diethyl phthalate	3.0	0.10	0.50	ug/L	5.0		60	10-114			08/07/18		
Dimethyl phthalate	1.5	0.10	0.50	ug/L	5.0		30	10-112			08/07/18		
Di-n-butyl phthalate	3.8	0.14	0.50	ug/L	5.0		76	10-118			08/07/18		
Di-n-octyl phthalate	4.5	0.11	0.50	ug/L	5.0		90	10-146			08/07/18		
Fluoranthene	0.096	0.0012	0.010	ug/L	0.10		96	26-137			08/07/18		
Fluorene	0.088	0.0043	0.010	ug/L	0.10		88	59-121			08/07/18		
Hexachlorobenzene	4.4	0.15	0.50	ug/L	5.0		88	10-152			08/07/18		
Hexachlorobutadiene	2.7	0.13	0.50	ug/L	5.0		54	24-116			08/07/18		
Hexachlorocyclopentadiene	1.9	0.14	0.50	ug/L	5.0		38	10-130			08/07/18		
Indeno(1,2,3-cd)pyrene	0.084	0.0027	0.010	ug/L	0.10		84	10-171			08/07/18		
Isophorone	4.5	0.11	0.50	ug/L	5.0		89	21-196			08/07/18		
Naphthalene	0.082	0.0027	0.010	ug/L	0.10		82	21-133			08/07/18		
Nitrobenzene	4.9	0.11	0.50	ug/L	5.0		98	35-180			08/07/18		
N-Nitrosodimethylamine (NDMA)	3.4	0.48	0.50	ug/L	5.0		68	10-130			08/07/18		
N-Nitrosodi-n-propylamine (NDPA)	3.6	0.10	0.50	ug/L	5.0		72	10-200			08/07/18		

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811019											Prepared: 8/1/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A811019-BS1)												
N-Nitrosodiphenylamine (as DPA)	4.0	0.24	0.50	ug/L	5.0		80	10-130			08/07/18	
Pentachlorophenol	4.8	0.20	1.0	ug/L	5.0		95	14-176			08/07/18	
Phenanthrene	0.086	0.0024	0.010	ug/L	0.10		86	54-120			08/07/18	
Phenol	4.0	0.10	0.50	ug/L	5.0		81	10-112			08/07/18	
Pyrene	0.091	0.0014	0.010	ug/L	0.10		91	52-115			08/07/18	
Surrogate: 2,4,6-Tribromophenol	*8.1*				*5.0*		*163*	*53-200*			08/07/18	
Surrogate: 2-Fluorobiphenyl	*4.2*				*5.0*		*85*	*40-127*			08/07/18	
Surrogate: 2-Fluorophenol	*4.1*				*5.0*		*83*	*42-123*			08/07/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*88*	*49-133*			08/07/18	
Surrogate: Phenol-d6	*4.5*				*5.0*		*90*	*52-125*			08/07/18	
Surrogate: p-Terphenyl-d14	*4.5*				*5.0*		*90*	*39-135*			08/07/18	
Blank Spike Dup (A811019-BSD1)												
1,2,4-Trichlorobenzene	3.5	0.10	0.50	ug/L	5.0		70	44-142	5	30	08/06/18	
1,2-Diphenylhydrazine (as Azobenzene)	4.0	0.10	0.50	ug/L	5.0		80	30-130	8	30	08/06/18	
2,4,6-Trichlorophenol	3.9	0.14	0.50	ug/L	5.0		78	37-144	16	30	08/06/18	
2,4-Dichlorophenol	4.1	0.10	0.50	ug/L	5.0		82	39-135	3	30	08/06/18	
2,4-Dimethylphenol	1.0	0.15	0.50	ug/L	5.0		21	10-175	40	30	08/06/18	BS3.0
2,4-Dinitrophenol	3.4	0.27	1.0	ug/L	5.0		69	10-191	11	30	08/06/18	
2,4-Dinitrotoluene	4.5	0.10	0.50	ug/L	5.0		90	39-139	4	30	08/06/18	
2,6-Dinitrotoluene	4.4	0.36	0.50	ug/L	5.0		88	50-158	6	30	08/06/18	
2-Chloronaphthalene	4.1	0.10	0.50	ug/L	5.0		82	60-118	1	30	08/06/18	
2-Chlorophenol	3.8	0.11	0.50	ug/L	5.0		76	23-134	1	30	08/06/18	
2-Nitrophenol	3.9	0.21	0.50	ug/L	5.0		78	29-182	1	30	08/06/18	
3,3-Dichlorobenzidine	12	0.54	2.0	ug/L	20		59	10-200	58	30	08/06/18	BS3.0
4,6-Dinitro-2-methylphenol	3.0	0.11	0.50	ug/L	5.0		61	10-181	1	30	08/06/18	
4-Bromophenyl phenyl ether	4.3	0.10	0.50	ug/L	5.0		85	53-127	4	30	08/06/18	
4-Chloro-3-methylphenol	2.3	0.10	0.50	ug/L	5.0		46	22-147	181	30	08/06/18	BS4.0
4-Chlorophenyl phenyl ether	4.1	0.23	0.50	ug/L	5.0		83	25-158	4	30	08/06/18	
4-Nitrophenol	3.9	0.26	1.0	ug/L	5.0		78	10-132	19	30	08/06/18	
Acenaphthene	0.085	0.0040	0.010	ug/L	0.10		85	47-145	1	30	08/06/18	
Acenaphthylene	0.069	0.0023	0.010	ug/L	0.10		69	33-145	1	30	08/06/18	
Anthracene	0.086	0.0020	0.010	ug/L	0.10		86	27-133	9	30	08/06/18	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	08/06/18	BS ***Low***
Benzo(a)anthracene	0.097	0.0023	0.010	ug/L	0.10		97	33-143	8	30	08/06/18	
Benzo(a)pyrene	0.068	0.0033	0.010	ug/L	0.10		68	17-163	1	30	08/06/18	
Benzo(b)fluoranthene	0.089	0.0021	0.010	ug/L	0.10		89	24-159	13	30	08/06/18	
Benzo(g,h,i)perylene	0.083	0.0039	0.010	ug/L	0.10		83	10-200	1	30	08/06/18	
Benzo(k)fluoranthene	0.095	0.0028	0.010	ug/L	0.10		95	11-162	8	30	08/06/18	
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0		88	33-184	0	30	08/06/18	
Bis(2-chloroethyl) ether	4.5	0.15	0.50	ug/L	5.0		89	12-158	0	30	08/06/18	
Bis(2-chloroisopropyl) ether	4.3	0.13	0.50	ug/L	5.0		86	36-166	1	30	08/06/18	
Bis(2-ethylhexyl) phthalate	4.4	0.29	1.0	ug/L	5.0		89	10-158	2	30	08/06/18	
Butyl benzyl phthalate	2.8	0.10	0.50	ug/L	5.0		57	10-152	3	30	08/06/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811019											Prepared: 8/1/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A811019-BSD1)												
Chrysene	0.087	0.0011	0.010	ug/L	0.10		87	17-168	3	30	08/06/18	
Dibenzo(a,h)anthracene	0.094	0.0031	0.010	ug/L	0.10		94	10-200	2	30	08/06/18	
Diethyl phthalate	2.7	0.10	0.50	ug/L	5.0		53	10-114	12	30	08/06/18	
Dimethyl phthalate	1.4	0.10	0.50	ug/L	5.0		28	10-112	7	30	08/06/18	
Di-n-butyl phthalate	3.8	0.14	0.50	ug/L	5.0		76	10-118	0	30	08/06/18	
Di-n-octyl phthalate	4.4	0.11	0.50	ug/L	5.0		89	10-146	1	30	08/06/18	
Fluoranthene	0.093	0.0012	0.010	ug/L	0.10		93	26-137	4	30	08/06/18	
Fluorene	0.086	0.0043	0.010	ug/L	0.10		86	59-121	3	30	08/06/18	
Hexachlorobenzene	4.1	0.15	0.50	ug/L	5.0		82	10-152	7	30	08/06/18	
Hexachlorobutadiene	3.0	0.13	0.50	ug/L	5.0		61	24-116	11	30	08/06/18	
Hexachlorocyclopentadiene	2.3	0.14	0.50	ug/L	5.0		46	10-130	19	30	08/06/18	
Indeno(1,2,3-cd)pyrene	0.083	0.0027	0.010	ug/L	0.10		83	10-171	1	30	08/06/18	
Isophorone	4.4	0.11	0.50	ug/L	5.0		88	21-196	2	30	08/06/18	
Naphthalene	0.080	0.0027	0.010	ug/L	0.10		80	21-133	2	30	08/06/18	
Nitrobenzene	4.5	0.11	0.50	ug/L	5.0		90	35-180	8	30	08/06/18	
N-Nitrosodimethylamine (NDMA)	3.3	0.48	0.50	ug/L	5.0		67	10-130	1	30	08/06/18	
N-Nitrosodi-n-propylamine (NDPA)	3.6	0.10	0.50	ug/L	5.0		73	10-200	1	30	08/06/18	
N-Nitrosodiphenylamine (as DPA)	4.4	0.24	0.50	ug/L	5.0		89	10-130	10	30	08/06/18	
Pentachlorophenol	4.4	0.20	1.0	ug/L	5.0		89	14-176	7	30	08/06/18	
Phenanthrene	0.088	0.0024	0.010	ug/L	0.10		88	54-120	3	30	08/06/18	
Phenol	3.9	0.10	0.50	ug/L	5.0		78	10-112	4	30	08/06/18	
Pyrene	0.089	0.0014	0.010	ug/L	0.10		89	52-115	3	30	08/06/18	
Surrogate: 2,4,6-Tribromophenol	*6.0*				*5.0*		*121*	*53-200*			08/06/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*80*	*40-127*			08/06/18	
Surrogate: 2-Fluorophenol	*3.9*				*5.0*		*79*	*42-123*			08/06/18	
Surrogate: Nitrobenzene-d5	*4.3*				*5.0*		*86*	*49-133*			08/06/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*89*	*52-125*			08/06/18	
Surrogate: p-Terphenyl-d14	*4.3*				*5.0*		*87*	*39-135*			08/06/18	
Matrix Spike (A811019-MS1), Source: A8G3857-02												
1,2,4-Trichlorobenzene	3.6	0.10	0.50	ug/L	5.0	ND	73	44-142			08/07/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.6	0.10	0.50	ug/L	5.0	ND	73	30-130			08/07/18	
2,4,6-Trichlorophenol	4.6	0.14	0.50	ug/L	5.0	ND	92	37-144			08/07/18	
2,4-Dichlorophenol	4.4	0.10	0.50	ug/L	5.0	ND	89	39-135			08/07/18	
2,4-Dimethylphenol	2.7	0.15	0.50	ug/L	5.0	ND	53	32-119			08/07/18	
2,4-Dinitrophenol	6.5	0.27	1.0	ug/L	5.0	ND	131	10-191			08/07/18	
2,4-Dinitrotoluene	4.8	0.10	0.50	ug/L	5.0	ND	96	39-139			08/07/18	
2,6-Dinitrotoluene	4.8	0.36	0.50	ug/L	5.0	ND	96	50-158			08/07/18	
2-Chloronaphthalene	4.1	0.10	0.50	ug/L	5.0	ND	83	60-118			08/07/18	
2-Chlorophenol	3.9	0.11	0.50	ug/L	5.0	ND	77	23-134			08/07/18	
2-Nitrophenol	4.6	0.21	0.50	ug/L	5.0	ND	92	29-182			08/07/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L	20	ND	0	10-200			08/07/18	MS1.0 ***Low***
4,6-Dinitro-2-methylphenol	5.3	0.11	0.50	ug/L	5.0	ND	107	10-181			08/07/18	
4-Bromophenyl phenyl ether	4.3	0.10	0.50	ug/L	5.0	ND	87	53-127			08/07/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811019											Prepared: 8/1/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A811019-MS1), Source: A8G3857-02												
4-Chloro-3-methylphenol	4.6	0.10	0.50	ug/L	5.0	ND	93	22-147			08/07/18	
4-Chlorophenyl phenyl ether	4.3	0.23	0.50	ug/L	5.0	ND	86	25-158			08/07/18	
4-Nitrophenol	4.8	0.26	1.0	ug/L	5.0	ND	97	10-132			08/07/18	
Acenaphthene	0.089	0.0040	0.010	ug/L	0.10	ND	90	47-145			08/07/18	
Acenaphthylene	0.078	0.0023	0.010	ug/L	0.10	ND	79	33-145			08/07/18	
Anthracene	0.080	0.0020	0.010	ug/L	0.10	ND	80	27-133			08/07/18	
Benzidine	ND	1.4	5.0	ug/L	20	ND	0	10-200			08/07/18	MS1.0 ***Low***
Benzo(a)anthracene	0.082	0.0023	0.010	ug/L	0.10	ND	82	33-143			08/07/18	
Benzo(a)pyrene	0.077	0.0033	0.010	ug/L	0.10	ND	78	17-163			08/07/18	
Benzo(b)fluoranthene	0.11	0.0021	0.010	ug/L	0.10	ND	111	24-159			08/07/18	
Benzo(g,h,i)perylene	0.038	0.0039	0.010	ug/L	0.10	ND	38	10-200			08/07/18	
Benzo(k)fluoranthene	0.10	0.0028	0.010	ug/L	0.10	ND	101	11-162			08/07/18	
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0	ND	88	33-184			08/07/18	
Bis(2-chloroethyl) ether	4.3	0.15	0.50	ug/L	5.0	ND	87	12-158			08/07/18	
Bis(2-chloroisopropyl) ether	4.4	0.13	0.50	ug/L	5.0	ND	88	36-166			08/07/18	
Bis(2-ethylhexyl) phthalate	4.2	0.29	1.0	ug/L	5.0	ND	84	10-158			08/07/18	
Butyl benzyl phthalate	2.8	0.10	0.50	ug/L	5.0	ND	56	10-152			08/07/18	
Chrysene	0.088	0.0011	0.010	ug/L	0.10	ND	89	17-168			08/07/18	
Dibenzo(a,h)anthracene	0.055	0.0031	0.010	ug/L	0.10	ND	55	10-200			08/07/18	
Diethyl phthalate	3.1	0.10	0.50	ug/L	5.0	ND	62	10-114			08/07/18	
Dimethyl phthalate	1.7	0.10	0.50	ug/L	5.0	ND	34	10-112			08/07/18	
Di-n-butyl phthalate	3.7	0.14	0.50	ug/L	5.0	ND	75	10-118			08/07/18	
Di-n-octyl phthalate	4.2	0.11	0.50	ug/L	5.0	ND	84	10-146			08/07/18	
Fluoranthene	0.099	0.0012	0.010	ug/L	0.10	ND	100	26-137			08/07/18	
Fluorene	0.097	0.0043	0.010	ug/L	0.10	ND	97	59-121			08/07/18	
Hexachlorobenzene	4.3	0.15	0.50	ug/L	5.0	ND	87	10-152			08/07/18	
Hexachlorobutadiene	3.3	0.13	0.50	ug/L	5.0	ND	66	24-116			08/07/18	
Hexachlorocyclopentadiene	2.0	0.14	0.50	ug/L	5.0	ND	39	10-130			08/07/18	
Indeno(1,2,3-cd)pyrene	0.048	0.0027	0.010	ug/L	0.10	ND	48	10-171			08/07/18	
Isophorone	4.4	0.11	0.50	ug/L	5.0	ND	88	21-196			08/07/18	
Naphthalene	0.14	0.0027	0.010	ug/L	0.10	0.063	77	21-133			08/07/18	
Nitrobenzene	4.8	0.11	0.50	ug/L	5.0	ND	96	35-180			08/07/18	
N-Nitrosodimethylamine (NDMA)	3.5	0.48	0.50	ug/L	5.0	ND	70	10-130			08/07/18	
N-Nitrosodi-n-propylamine (NDPA)	3.9	0.10	0.50	ug/L	5.0	ND	78	10-200			08/07/18	
N-Nitrosodiphenylamine (as DPA)	4.3	0.24	0.50	ug/L	5.0	ND	85	10-130			08/07/18	
Pentachlorophenol	6.0	0.20	1.0	ug/L	5.0	ND	121	14-176			08/07/18	
Phenanthrene	0.095	0.0024	0.010	ug/L	0.10	ND	95	54-120			08/07/18	
Phenol	4.0	0.10	0.50	ug/L	5.0	ND	80	10-112			08/07/18	
Pyrene	0.094	0.0014	0.010	ug/L	0.10	ND	94	52-115			08/07/18	
Surrogate: 2,4,6-Tribromophenol	*10*				*5.0*		*209*	*53-200*			08/07/18	*SR.x*
Surrogate: 2-Fluorobiphenyl	*4.1*				*5.0*		*82*	*40-127*			08/07/18	
Surrogate: 2-Fluorophenol	*3.6*				*5.0*		*73*	*42-123*			08/07/18	
Surrogate: Nitrobenzene-d5	*4.3*				*5.0*		*87*	*49-133*			08/07/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811019											Prepared: 8/1/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A811019-MS1), Source: A8G3857-02												
Surrogate: Phenol-d6	*4.3*				*5.0*		*86*	*52-125*			08/07/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*89*	*39-135*			08/07/18	

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Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-002	State of California - ELAP	2993
State of Oregon - NELAP	4119-002				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-17

A8G3857

07312018

Abalo1080

Turnaround: Standard
Due Date: 8/14/2018

Abalone Coast Analytical, Inc.

Printed: 7/31/2018 5:25:26PM

O.U 1.6 #46

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

A8G3857 07/31/2018
24 Hr Abalo1080 10

Lab Reference # 18-4803

Client Full Name/ Business: Address State Zip

City of Pismo Beach

Bill To: **Same**

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name
Hank Hix
Hank Hix

Project: **R/O Brine Analysis**
Contact Full Name: **Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	0846- 1330	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	1x p/unp half gal, p/unp 1 liter	-1
	07/27/18	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
					3x VV/HCl, 1x VV/unp	
R/O Feed Water	0812-0835	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
	07/27/18	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
					3x VV/HCl, 1x VV/unp	

Relinquished By: Hank Hix	Received By:	Received By:	Lab:
Date/Time: 0900 07/27/18	Date/Time: 7/27/18 1232	Date/Time: 7/31/18 1000	
Lab:	Lab:	Lab:	Lab:

Method Of Shipment:
Client
Courier ACA
Other:

Condition
Intact (y/n) Yes
Sediment
Temp. 20°C
On Ice (Yes) No

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile:

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

0900 BI PAPER BW FOAM

A8G3857 07/31/2018
Abalo1080 10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: Yes No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	Yes No NA	Were correct containers and preservatives received for the tests requested?	Yes No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No NA	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	Yes No NA Yes No NA
Did all bottles arrive unbroken and intact?	Yes No	Was a sufficient amount of sample received?	Yes No
Did all bottle labels agree with COC?	Yes No	Do samples have a hold time <72 hours?	Yes No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No NA	Was PM notified of discrepancies? PM: By/Time:	Yes No NA

Bottles Received ("|" means preservation/chlorine checks are either N/A or are performed in the lab)

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1-2				
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—	1C				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ DW	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ WW	pH 9.3-9.7	P F					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ 7199 ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F			7321B		
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	3C				
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C				
HCl (AG) Lt. Blue Label O&G, Diesel, TCP	—	—	3V				
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—					
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other:							
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Solids: Brass / Steel / Plastic Bag	—	—					

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: CC @ 1119 Labels checked by: [illegible] @ 1136 RUSH Paged by: _____ @ _____

External

A8G3857

MK

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

August 9, 2018

Ceres ID: 12244

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on August 2, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8G3857.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12244-001	R/O Brine A8G3857-01	8/2/2018	7/27/2018 9:00
12244-002	R/O Feed Water A8G3857-02	8/2/2018	7/27/2018 8:35

Section II: Data Summary

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Quality Assurance Sample Method Blank Project ID: A8G3857	QC Batch #: 1836 Matrix: Waste Water Sample Size: 1.000 L	Date Received: NA Date Extracted: 8/7/2018 ZB-5MS Analysis: 8/8/2018

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 3.10	0.887	5.00	
12378-PeCDD	DL= 2.69	2.56	25.0	
123478-HxCDD	DL= 2.81	3.08	25.0	
123678-HxCDD	DL= 2.88	5.29	25.0	
123789-HxCDD	DL= 2.79	13.1	25.0	
1234678-HpCDD	DL= 2.23	5.15	25.0	
OCDD	DL= 3.56	8.50	50.0	
2,3,7,8-TCDF	DL= 3.74	0.733	5.00	
12378-PeCDF	DL= 2.76	2.96	25.0	
23478-PeCDF	DL= 2.37	5.40	25.0	
123478-HxCDF	DL= 1.78	3.93	25.0	
123678-HxCDF	DL= 2.56	2.94	25.0	
234678-HxCDF	DL= 2.55	4.32	25.0	
123789-HxCDF	DL= 2.90	4.70	25.0	
1234678-HpCDF	DL= 1.72	4.24	25.0	
1234789-HpCDF	DL= 2.16	5.74	25.0	
OCDF	DL= 2.81	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.10	
Total PeCDD	DL= 2.69	
Total HxCDD	DL= 2.88	
Total HpCDD	DL= 2.23	
Total TCDF	DL= 3.74	
Total PeCDF	DL= 2.76	
Total HxCDF	DL= 2.90	
Total HpCDF	DL= 2.16	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	110	25-164	
13C-12378-PeCDD	173	25-181	
13C-123478-HxCDD	88.1	32-141	
13C-123678-HxCDD	75.6	28-130	
13C-1234678-HpCDD	103	23-140	
13C-OCDD	96.4	17-157	
13C-2378-TCDF	119	24-169	
13C-12378-PeCDF	137	24-185	
13C-23478-PeCDF	164	21-178	
13C-123478-HxCDF	124	26-152	
13C-123678-HxCDF	94.0	26-123	
13C-234678-HxCDF	91.4	28-136	
13C-123789-HxCDF	95.0	29-147	
13C-1234678-HpCDF	109	28-143	
13C-1234789-HpCDF	109	26-138	

CRS

37Cl4-2378-TCDD	91.9	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery	QC Batch #: 1836 Matrix: Waste Water	Date Received: NA Date Extracted: 8/7/2018
Project ID: A8G3857	Sample Size: 1.000 L	ZB-5MS Analysis: 8/8/2018

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	10.5	6.7-15.8	13C-2378-TCDD	110	20-175
12378-PeCDD	54.8	35-71	13C-12378-PeCDD	167	21-227
123478-HxCDD	55.9	35-82	13C-123478-HxCDD	79.3	21-193
123678-HxCDD	59.8	38-67	13C-123678-HxCDD	76.0	25-163
123789-HxCDD	67.2	32-81	13C-1234678-HpCDD	93.1	26-166
1234678-HpCDD	57.2	35-70	13C-OCDD	84.8	13-198
OCDD	115	78-144	13C-2378-TCDF	111	22-152
2,3,7,8-TCDF	11.3	7.5-15.8	13C-12378-PeCDF	161	21-192
12378-PeCDF	61.2	40-67	13C-23478-PeCDF	170	13-328
23478-PeCDF	60.6	34-80	13C-123478-HxCDF	114	19-202
123478-HxCDF	54.0	36-67	13C-123678-HxCDF	95.9	21-159
123678-HxCDF	51.6	42-65	13C-234678-HxCDF	84.9	22-176
234678-HxCDF	52.7	35-78	13C-123789-HxCDF	97.8	17-205
123789-HxCDF	56.6	39-65	13C-1234678-HpCDF	102	21-158
1234678-HpCDF	48.0	41-61	13C-1234789-HpCDF	100	20-186
1234789-HpCDF	50.2	39-69			
OCDF	104	63-170			
			CRS		
			37Cl4-2378-TCDD	104	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Client Sample ID: R/O Brine A8G3857-01

Project ID: A8G3857	**Ceres Sample ID:** 12244-001	**Date Received:** 8/2/2018
	QC Batch #: 1836	**Date Extracted:** 8/7/2018
Date Collected: 7/27/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/8/2018
Time Collected: 9:00	**Sample Size:** 0.993 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 3.81	0.887	5.04	
12378-PeCDD	DL= 6.35	2.56	25.2	
123478-HxCDD	DL= 6.23	3.08	25.2	
123678-HxCDD	DL= 6.25	5.29	25.2	
123789-HxCDD	DL= 6.12	13.1	25.2	
1234678-HpCDD	DL= 6.87	5.15	25.2	
OCDD	DL= 9.64	8.50	50.4	
2,3,7,8-TCDF	DL= 4.44	0.733	5.04	
12378-PeCDF	DL= 4.20	2.96	25.2	
23478-PeCDF	DL= 2.88	5.40	25.2	
123478-HxCDF	DL= 3.29	3.93	25.2	
123678-HxCDF	DL= 4.90	2.94	25.2	
234678-HxCDF	DL= 4.69	4.32	25.2	
123789-HxCDF	DL= 5.32	4.70	25.2	
1234678-HpCDF	DL= 3.71	4.24	25.2	
1234789-HpCDF	DL= 5.19	5.74	25.2	
OCDF	DL= 8.19	11.7	50.4	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.81	
Total PeCDD	DL= 6.35	
Total HxCDD	DL= 6.25	
Total HpCDD	DL= 6.87	
Total TCDF	DL= 4.44	
Total PeCDF	DL= 4.20	
Total HxCDF	DL= 5.32	
Total HpCDF	DL= 5.19	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	77.8	25-164	
13C-12378-PeCDD	97.2	25-181	
13C-123478-HxCDD	46.5	32-141	
13C-123678-HxCDD	45.4	28-130	
13C-1234678-HpCDD	66.7	23-140	
13C-OCDD	50.5	17-157	
13C-2378-TCDF	79.1	24-169	
13C-12378-PeCDF	89.9	24-185	
13C-23478-PeCDF	118	21-178	
13C-123478-HxCDF	74.7	26-152	
13C-123678-HxCDF	52.2	26-123	
13C-234678-HxCDF	56.5	28-136	
13C-123789-HxCDF	56.8	29-147	
13C-1234678-HpCDF	65.7	28-143	
13C-1234789-HpCDF	60.6	26-138	

CRS

37Cl4-2378-TCDD	124	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.
4919 Windplay Dr, Suite 1, El Dorado Hills, CA 95762

July 30, 2018

Ceres ID: 12223

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on July 24, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8G2848.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date	&Time
12223-001	R/O Brine A8G2848-01	7/24/2018	7/19/2018	10:35
12223-002	R/O Feed Water A8G2848-02	7/24/2018	7/19/2018	9:30

Section II: Data Summary

EPA Method 1613B

Quality Assurance Sample Method Blank		Date Received: NA
	QC Batch #: 1827	Date Extracted: 7/26/2018
	Matrix: Waste Water	ZB-5MS Analysis: 7/28/2018
Project ID: A8G2848	Sample Size: 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 2.14	0.887	5.00	
12378-PeCDD	DL= 3.93	2.56	25.0	
123478-HxCDD	DL= 7.41	3.08	25.0	
123678-HxCDD	DL= 8.95	5.29	25.0	
123789-HxCDD	DL= 7.97	13.1	25.0	
1234678-HpCDD	DL= 8.34	5.15	25.0	
OCDD	DL= 17.4	8.50	50.0	
2,3,7,8-TCDF	DL= 1.79	0.733	5.00	
12378-PeCDF	DL= 3.61	2.96	25.0	
23478-PeCDF	DL= 3.20	5.40	25.0	
123478-HxCDF	DL= 2.49	3.93	25.0	
123678-HxCDF	DL= 2.67	2.94	25.0	
234678-HxCDF	DL= 2.78	4.32	25.0	
123789-HxCDF	DL= 4.16	4.70	25.0	
1234678-HpCDF	DL= 3.61	4.24	25.0	
1234789-HpCDF	DL= 5.60	5.74	25.0	
OCDF	DL= 12.6	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 2.14	
Total PeCDD	DL= 3.93	
Total HxCDD	DL= 8.95	
Total HpCDD	DL= 8.34	
Total TCDF	DL= 1.79	
Total PeCDF	DL= 3.61	
Total HxCDF	DL= 4.16	
Total HpCDF	DL= 5.60	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	109	25-164	
13C-12378-PeCDD	87.8	25-181	
13C-123478-HxCDD	89.2	32-141	
13C-123678-HxCDD	80.7	28-130	
13C-1234678-HpCDD	100	23-140	
13C-OCDD	80.3	17-157	
13C-2378-TCDF	102	24-169	
13C-12378-PeCDF	81.1	24-185	
13C-23478-PeCDF	83.1	21-178	
13C-123478-HxCDF	126	26-152	
13C-123678-HxCDF	121	26-123	
13C-234678-HxCDF	131	28-136	
13C-123789-HxCDF	118	29-147	
13C-1234678-HpCDF	109	28-143	
13C-1234789-HpCDF	99.3	26-138	

CRS

37Cl4-2378-TCDD	95.3	35-197

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery Project ID: A8G2848	QC Batch #: 1827 Matrix: Waste Water Sample Size: 1.000 L	Date Received: NA Date Extracted: 7/26/2018 ZB-5MS Analysis: 7/28/2018

Analyte	Conc. (ng/mL)	Limits (a)
2,3,7,8-TCDD	10.3	6.7-15.8
12378-PeCDD	50.6	35-71
123478-HxCDD	61.5	35-82
123678-HxCDD	63.9	38-67
123789-HxCDD	62.4	32-81
1234678-HpCDD	53.8	35-70
OCDD	117	78-144
2,3,7,8-TCDF	10.3	7.5-15.8
12378-PeCDF	50.3	40-67
23478-PeCDF	48.5	34-80
123478-HxCDF	49.7	36-67
123678-HxCDF	50.7	42-65
234678-HxCDF	50.9	35-78
123789-HxCDF	54.2	39-65
1234678-HpCDF	43.5	41-61
1234789-HpCDF	44.7	39-69
OCDF	112	63-170

Labeled Standards	% Rec.	Limits (a)
13C-2378-TCDD	109	20-175
13C-12378-PeCDD	116	21-227
13C-123478-HxCDD	86.4	21-193
13C-123678-HxCDD	85.3	25-163
13C-1234678-HpCDD	101	26-166
13C-OCDD	88.4	13-198
13C-2378-TCDF	121	22-152
13C-12378-PeCDF	108	21-192
13C-23478-PeCDF	97.6	13-328
13C-123478-HxCDF	111	19-202
13C-123678-HxCDF	113	21-159
13C-234678-HxCDF	100	22-176
13C-123789-HxCDF	98.1	17-205
13C-1234678-HpCDF	100	21-158
13C-1234789-HpCDF	93.8	20-186
CRS		
37Cl4-2378-TCDD	96.6	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Client Sample ID: R/O Brine A8G2848-01		
Project ID: A8G2848	**Ceres Sample ID:** 12223-001	**Date Received:** 7/24/2018
	QC Batch #: 1827	**Date Extracted:** 7/26/2018
Date Collected: 7/19/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 7/28/2018
Time Collected: 10:35	**Sample Size:** 0.987 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.35	0.887	5.07	
12378-PeCDD	DL= 5.47	2.56	25.3	
123478-HxCDD	DL= 8.19	3.08	25.3	
123678-HxCDD	DL= 8.62	5.29	25.3	
123789-HxCDD	DL= 8.22	13.1	25.3	
1234678-HpCDD	DL= 13.3	5.15	25.3	
OCDD	DL= 18.5	8.50	50.7	
2,3,7,8-TCDF	DL= 3.42	0.733	5.07	
12378-PeCDF	DL= 4.50	2.96	25.3	
23478-PeCDF	DL= 3.14	5.40	25.3	
123478-HxCDF	DL= 4.32	3.93	25.3	
123678-HxCDF	DL= 4.81	2.94	25.3	
234678-HxCDF	DL= 4.67	4.32	25.3	
123789-HxCDF	DL= 6.63	4.70	25.3	
1234678-HpCDF	DL= 8.57	4.24	25.3	
1234789-HpCDF	DL= 11.2	5.74	25.3	
OCDF	DL= 21.5	11.7	50.7	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	70.7	25-164	
13C-12378-PeCDD	55.6	25-181	
13C-123478-HxCDD	48.3	32-141	
13C-123678-HxCDD	62.8	28-130	
13C-1234678-HpCDD	55.2	23-140	
13C-OCDD	45.4	17-157	
13C-2378-TCDF	79.7	24-169	
13C-12378-PeCDF	44.3	24-185	
13C-23478-PeCDF	52.7	21-178	
13C-123478-HxCDF	75.0	26-152	
13C-123678-HxCDF	77.3	26-123	
13C-234678-HxCDF	79.1	28-136	
13C-123789-HxCDF	71.4	29-147	
13C-1234678-HpCDF	54.7	28-143	
13C-1234789-HpCDF	53.8	26-138	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.35	
Total PeCDD	DL= 5.47	
Total HxCDD	DL= 8.62	
Total HpCDD	DL= 13.3	
Total TCDF	DL= 3.42	
Total PeCDF	DL= 4.50	
Total HxCDF	DL= 6.63	
Total HpCDF	DL= 11.2	

CRS			
37Cl4-2378-TCDD	103	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Feed Water A8G2848-02		
Project ID: A8G2848	**Ceres Sample ID:** 12223-002	**Date Received:** 7/24/2018
	QC Batch #: 1827	**Date Extracted:** 7/26/2018
Date Collected: 7/19/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 7/28/2018
Time Collected: 9:30	**Sample Size:** 1.019 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 2.37	0.887	4.91	
12378-PeCDD	DL= 4.31	2.56	24.5	
123478-HxCDD	DL= 8.25	3.08	24.5	
123678-HxCDD	DL= 8.57	5.29	24.5	
123789-HxCDD	DL= 8.23	13.1	24.5	
1234678-HpCDD	DL= 11.4	5.15	24.5	
OCDD	DL= 24.9	8.50	49.1	
2,3,7,8-TCDF	DL= 2.91	0.733	4.91	
12378-PeCDF	DL= 5.03	2.96	24.5	
23478-PeCDF	DL= 4.33	5.40	24.5	
123478-HxCDF	DL= 3.79	3.93	24.5	
123678-HxCDF	DL= 3.91	2.94	24.5	
234678-HxCDF	DL= 4.23	4.32	24.5	
123789-HxCDF	DL= 5.97	4.70	24.5	
1234678-HpCDF	DL= 7.87	4.24	24.5	
1234789-HpCDF	DL= 8.37	5.74	24.5	
OCDF	DL= 18.6	11.7	49.1	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 2.37	
Total PeCDD	DL= 4.31	
Total HxCDD	DL= 8.57	
Total HpCDD	DL= 11.4	
Total TCDF	DL= 2.91	
Total PeCDF	DL= 5.03	
Total HxCDF	DL= 5.97	
Total HpCDF	DL= 8.37	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	58.8	25-164	
13C-12378-PeCDD	43.8	25-181	
13C-123478-HxCDD	40.8	32-141	
13C-123678-HxCDD	48.0	28-130	
13C-1234678-HpCDD	50.1	23-140	
13C-OCDD	35.3	17-157	
13C-2378-TCDF	67.6	24-169	
13C-12378-PeCDF	34.8	24-185	
13C-23478-PeCDF	38.2	21-178	
13C-123478-HxCDF	61.3	26-152	
13C-123678-HxCDF	66.7	26-123	
13C-234678-HxCDF	64.9	28-136	
13C-123789-HxCDF	59.2	29-147	
13C-1234678-HpCDF	38.9	28-143	
13C-1234789-HpCDF	47.4	26-138	

CRS

37Cl4-2378-TCDD	107	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8G2848

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I II III IV

Sample ID	Samp Desc			Sample Date
A8G2848-01	R/O Brine	Client Matrix	Water	07/19/2018 10:35
Lab Matrix:	Water			
Analysis:	(1) L AG W None			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			
A8G2848-02	R/O Feed Water	Client Matrix	Water	07/19/2018 09:30
Lab Matrix:	Water			
Analysis:	1			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			

Released By	Date	Received By	Date
	7/23/18		7/24/18 10:40
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: JK (initials)

Ceres ID: 12223	Date/Time: 7/24/18 10:40
Client Project ID: 1892848	Received Temp: 1.8 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?	(Y) / N
Chain of Custody Received by signed?	(Y) / N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	(NA)
Unlabeled / Illegible Samples	Y / (N)
Proper Containers:	(Y) / N
Preservation Acceptable (Chemical or Temperature)?	(Y) / N
Drinking Water, Sodium Thiosulfate present?	Y / N / (NA)
Residual Cl?	Y / (N)
Aqueous sample pH: 7.7	
List COC discrepancies: JK 7/24/18	
List Damaged Samples: JK 7/24/18	

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

August 9, 2018

Ceres ID: 12244

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on August 2, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8G3857.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12244-001	R/O Brine A8G3857-01	8/2/2018	7/27/2018 9:00
12244-002	R/O Feed Water A8G3857-02	8/2/2018	7/27/2018 8:35

Section II: Data Summary

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Quality Assurance Sample Method Blank Project ID: A8G3857	QC Batch #: 1836 Matrix: Waste Water Sample Size: 1.000 L	Date Received: NA Date Extracted: 8/7/2018 ZB-5MS Analysis: 8/8/2018

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 3.10	0.887	5.00	
12378-PeCDD	DL= 2.69	2.56	25.0	
123478-HxCDD	DL= 2.81	3.08	25.0	
123678-HxCDD	DL= 2.88	5.29	25.0	
123789-HxCDD	DL= 2.79	13.1	25.0	
1234678-HpCDD	DL= 2.23	5.15	25.0	
OCDD	DL= 3.56	8.50	50.0	
2,3,7,8-TCDF	DL= 3.74	0.733	5.00	
12378-PeCDF	DL= 2.76	2.96	25.0	
23478-PeCDF	DL= 2.37	5.40	25.0	
123478-HxCDF	DL= 1.78	3.93	25.0	
123678-HxCDF	DL= 2.56	2.94	25.0	
234678-HxCDF	DL= 2.55	4.32	25.0	
123789-HxCDF	DL= 2.90	4.70	25.0	
1234678-HpCDF	DL= 1.72	4.24	25.0	
1234789-HpCDF	DL= 2.16	5.74	25.0	
OCDF	DL= 2.81	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.10	
Total PeCDD	DL= 2.69	
Total HxCDD	DL= 2.88	
Total HpCDD	DL= 2.23	
Total TCDF	DL= 3.74	
Total PeCDF	DL= 2.76	
Total HxCDF	DL= 2.90	
Total HpCDF	DL= 2.16	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	110	25-164	
13C-12378-PeCDD	173	25-181	
13C-123478-HxCDD	88.1	32-141	
13C-123678-HxCDD	75.6	28-130	
13C-1234678-HpCDD	103	23-140	
13C-OCDD	96.4	17-157	
13C-2378-TCDF	119	24-169	
13C-12378-PeCDF	137	24-185	
13C-23478-PeCDF	164	21-178	
13C-123478-HxCDF	124	26-152	
13C-123678-HxCDF	94.0	26-123	
13C-234678-HxCDF	91.4	28-136	
13C-123789-HxCDF	95.0	29-147	
13C-1234678-HpCDF	109	28-143	
13C-1234789-HpCDF	109	26-138	

CRS

37Cl4-2378-TCDD	91.9	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery	QC Batch #: 1836 Matrix: Waste Water	Date Received: NA Date Extracted: 8/7/2018
Project ID: A8G3857	Sample Size: 1.000 L	ZB-5MS Analysis: 8/8/2018

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	10.5	6.7-15.8	13C-2378-TCDD	110	20-175
12378-PeCDD	54.8	35-71	13C-12378-PeCDD	167	21-227
123478-HxCDD	55.9	35-82	13C-123478-HxCDD	79.3	21-193
123678-HxCDD	59.8	38-67	13C-123678-HxCDD	76.0	25-163
123789-HxCDD	67.2	32-81	13C-1234678-HpCDD	93.1	26-166
1234678-HpCDD	57.2	35-70	13C-OCDD	84.8	13-198
OCDD	115	78-144	13C-2378-TCDF	111	22-152
2,3,7,8-TCDF	11.3	7.5-15.8	13C-12378-PeCDF	161	21-192
12378-PeCDF	61.2	40-67	13C-23478-PeCDF	170	13-328
23478-PeCDF	60.6	34-80	13C-123478-HxCDF	114	19-202
123478-HxCDF	54.0	36-67	13C-123678-HxCDF	95.9	21-159
123678-HxCDF	51.6	42-65	13C-234678-HxCDF	84.9	22-176
234678-HxCDF	52.7	35-78	13C-123789-HxCDF	97.8	17-205
123789-HxCDF	56.6	39-65	13C-1234678-HpCDF	102	21-158
1234678-HpCDF	48.0	41-61	13C-1234789-HpCDF	100	20-186
1234789-HpCDF	50.2	39-69			
OCDF	104	63-170			
			CRS		
			37Cl4-2378-TCDD	104	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Client Sample ID: R/O Brine A8G3857-01

Project ID: A8G3857	**Ceres Sample ID:** 12244-001	**Date Received:** 8/2/2018
	QC Batch #: 1836	**Date Extracted:** 8/7/2018
Date Collected: 7/27/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/8/2018
Time Collected: 9:00	**Sample Size:** 0.993 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 3.81	0.887	5.04	
12378-PeCDD	DL= 6.35	2.56	25.2	
123478-HxCDD	DL= 6.23	3.08	25.2	
123678-HxCDD	DL= 6.25	5.29	25.2	
123789-HxCDD	DL= 6.12	13.1	25.2	
1234678-HpCDD	DL= 6.87	5.15	25.2	
OCDD	DL= 9.64	8.50	50.4	
2,3,7,8-TCDF	DL= 4.44	0.733	5.04	
12378-PeCDF	DL= 4.20	2.96	25.2	
23478-PeCDF	DL= 2.88	5.40	25.2	
123478-HxCDF	DL= 3.29	3.93	25.2	
123678-HxCDF	DL= 4.90	2.94	25.2	
234678-HxCDF	DL= 4.69	4.32	25.2	
123789-HxCDF	DL= 5.32	4.70	25.2	
1234678-HpCDF	DL= 3.71	4.24	25.2	
1234789-HpCDF	DL= 5.19	5.74	25.2	
OCDF	DL= 8.19	11.7	50.4	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.81	
Total PeCDD	DL= 6.35	
Total HxCDD	DL= 6.25	
Total HpCDD	DL= 6.87	
Total TCDF	DL= 4.44	
Total PeCDF	DL= 4.20	
Total HxCDF	DL= 5.32	
Total HpCDF	DL= 5.19	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	77.8	25-164	
13C-12378-PeCDD	97.2	25-181	
13C-123478-HxCDD	46.5	32-141	
13C-123678-HxCDD	45.4	28-130	
13C-1234678-HpCDD	66.7	23-140	
13C-OCDD	50.5	17-157	
13C-2378-TCDF	79.1	24-169	
13C-12378-PeCDF	89.9	24-185	
13C-23478-PeCDF	118	21-178	
13C-123478-HxCDF	74.7	26-152	
13C-123678-HxCDF	52.2	26-123	
13C-234678-HxCDF	56.5	28-136	
13C-123789-HxCDF	56.8	29-147	
13C-1234678-HpCDF	65.7	28-143	
13C-1234789-HpCDF	60.6	26-138	

CRS

37Cl4-2378-TCDD	124	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Client Sample ID: R/O Feed Water A8G3857-02

Project ID: A8G3857	**Ceres Sample ID:** 12244-002	**Date Received:** 8/2/2018
	QC Batch #: 1836	**Date Extracted:** 8/7/2018
Date Collected: 7/27/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/8/2018
Time Collected: 8:35	**Sample Size:** 1.010 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 4.38	0.887	4.95		13C-2378-TCDD	66.9	25-164	
12378-PeCDD	DL= 4.73	2.56	24.8		13C-12378-PeCDD	69.6	25-181	
123478-HxCDD	DL= 9.23	3.08	24.8		13C-123478-HxCDD	32.5	32-141	
123678-HxCDD	DL= 9.06	5.29	24.8		13C-123678-HxCDD	32.1	28-130	
123789-HxCDD	DL= 8.97	13.1	24.8		13C-1234678-HpCDD	47.2	23-140	
1234678-HpCDD	DL= 6.33	5.15	24.8		13C-OCDD	33.9	17-157	
OCDD	DL= 11.1	8.50	49.5		13C-2378-TCDF	66.8	24-169	
2,3,7,8-TCDF	DL= 4.65	0.733	4.95		13C-12378-PeCDF	56.3	24-185	
12378-PeCDF	DL= 6.41	2.96	24.8		13C-23478-PeCDF	79.4	21-178	
23478-PeCDF	DL= 4.48	5.40	24.8		13C-123478-HxCDF	53.8	26-152	
123478-HxCDF	DL= 5.55	3.93	24.8		13C-123678-HxCDF	34.5	26-123	
123678-HxCDF	DL= 9.14	2.94	24.8		13C-234678-HxCDF	40.6	28-136	
234678-HxCDF	DL= 7.30	4.32	24.8		13C-123789-HxCDF	38.6	29-147	
123789-HxCDF	DL= 9.57	4.70	24.8		13C-1234678-HpCDF	47.4	28-143	
1234678-HpCDF	DL= 4.07	4.24	24.8		13C-1234789-HpCDF	50.0	26-138	
1234789-HpCDF	DL= 4.56	5.74	24.8					
OCDF	DL= 10.4	11.7	49.5					

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.38	
Total PeCDD	DL= 4.73	
Total HxCDD	DL= 9.23	
Total HpCDD	DL= 6.33	
Total TCDF	DL= 4.65	
Total PeCDF	DL= 6.41	
Total HxCDF	DL= 9.57	
Total HpCDF	DL= 4.56	

CRS

37Cl4-2378-TCDD	102	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.

EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.

(a) - Lower control limit - Upper control limit

(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Client Sample ID: R/O Feed Water A8G3857-02

Project ID: A8G3857	**Ceres Sample ID:** 12244-002	**Date Received:** 8/2/2018
	QC Batch #: 1836	**Date Extracted:** 8/7/2018
Date Collected: 7/27/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/8/2018
Time Collected: 8:35	**Sample Size:** 1.010 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 4.38	0.887	4.95		13C-2378-TCDD	66.9	25-164	
12378-PeCDD	DL= 4.73	2.56	24.8		13C-12378-PeCDD	69.6	25-181	
123478-HxCDD	DL= 9.23	3.08	24.8		13C-123478-HxCDD	32.5	32-141	
123678-HxCDD	DL= 9.06	5.29	24.8		13C-123678-HxCDD	32.1	28-130	
123789-HxCDD	DL= 8.97	13.1	24.8		13C-1234678-HpCDD	47.2	23-140	
1234678-HpCDD	DL= 6.33	5.15	24.8		13C-OCDD	33.9	17-157	
OCDD	DL= 11.1	8.50	49.5		13C-2378-TCDF	66.8	24-169	
2,3,7,8-TCDF	DL= 4.65	0.733	4.95		13C-12378-PeCDF	56.3	24-185	
12378-PeCDF	DL= 6.41	2.96	24.8		13C-23478-PeCDF	79.4	21-178	
23478-PeCDF	DL= 4.48	5.40	24.8		13C-123478-HxCDF	53.8	26-152	
123478-HxCDF	DL= 5.55	3.93	24.8		13C-123678-HxCDF	34.5	26-123	
123678-HxCDF	DL= 9.14	2.94	24.8		13C-234678-HxCDF	40.6	28-136	
234678-HxCDF	DL= 7.30	4.32	24.8		13C-123789-HxCDF	38.6	29-147	
123789-HxCDF	DL= 9.57	4.70	24.8		13C-1234678-HpCDF	47.4	28-143	
1234678-HpCDF	DL= 4.07	4.24	24.8		13C-1234789-HpCDF	50.0	26-138	
1234789-HpCDF	DL= 4.56	5.74	24.8					
OCDF	DL= 10.4	11.7	49.5					

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.38	
Total PeCDD	DL= 4.73	
Total HxCDD	DL= 9.23	
Total HpCDD	DL= 6.33	
Total TCDF	DL= 4.65	
Total PeCDF	DL= 6.41	
Total HxCDF	DL= 9.57	
Total HpCDF	DL= 4.56	

CRS

37Cl4-2378-TCDD	102	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.

EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.

(a) - Lower control limit - Upper control limit

(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8G3857

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc			Sample Date
A8G3857-01	R/O Brine	Client Matrix	Water	07/27/2018 09:00
Lab Matrix:	Water			
Analysis:	1 2 A 6 None			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			
A8G3857-02	R/O Feed Water	Client Matrix	Water	07/27/2018 08:35
Lab Matrix:	Water			
Analysis:	4			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			

Released By	8/1/18 Date	Received By	8/2/18 11:25 Date
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: _____ (initials)

Ceres ID: 12144		Date/Time: 8/2/18 11:25
Client Project ID: 486 3857		Received Temp: 1.4 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?		(Y) / N
Chain of Custody Received by signed?		(Y) / N
Custody Seals?	Present?	Y / N
	Intact?	Y / N
	NA:	(NA)
Unlabeled / Illegible Samples		Y / (N)
Proper Containers:		(Y) / N
Preservation Acceptable (Chemical or Temperature)?		(Y) / N
Drinking Water, Sodium Thiosulfate present?		Y / N / (NA)
Residual Cl?		Y / (N)
Aqueous sample pH: 7.57		

List COC discrepancies:

8/2/18

List Damaged Samples:

8/2/18

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: August 15, 2018

Work Order Number: A8G3857

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8G3857-01	07/27/18 (09:00)		900.0	Gross Beta	4.21	±	1.11	2.01
R/O Brine			901.1	K-40	1148	±	289	605
		Water						
A8G3857-02	07/27/18 (08:35)		900.0	Gross Beta	1.98	±	0.96	1.93
R/O Feed Water			901.1	K-40	1902	±	306	599
		Water						

Analyses Date: August 13-15, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	469.75 pCi	441.42 pCi	93.97	6.03	A
Gamma (Cs-137)	786.25 pCi	727.62 pCi	92.54	7.46	A

Flag:

A = result accepted, Bias ≤ 20%
N = result not acceptable, Bias > 20%

Patricia Davi
Patricia Davi
QA/QC Manager
Davi Laboratories

BSK ASSOCIATES

SUBCONTRACT ORDER 2508-8,9

A8G3857

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Davi Laboratories
730 Alfred Nobel Drive
Hercules, CA 94547-1805
Phone :(510) 724-9450
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc		Sample Date
8 A8G3857-01	R/O Brine	Client Matrix Water	07/27/2018 09:00
Lab Matrix:	Water		
	Analysis:		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	
9 A8G3857-02	R/O Feed Water	Client Matrix Water	07/27/2018 08:35
Lab Matrix:	Water		
	Analysis:		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	

Released By	Date	Received By	Date
[signature]	8 2-18	[signature]	8/06/18 (13)
Released By	Date	Received By	Date

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8H0251
8/31/2018
Invoice: A825544

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8H0251 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 8/2/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Michelle Kawaguchi

Michelle Kawaguchi, Project Manager

NELAP ACCREDITED TNI LABORATORY

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-4876 City of Pismo Beach	**Project PO#:**	-
Received:	8/02/2018 - 11:30		
Report Due:	8/28/2018		

Sample Receipt Conditions

Cooler: Cooler #2
Temperature on Receipt ºC: 3.4

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Cooler: Default Cooler
Temperature on Receipt ºC: 4.6

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
B2.1	Analyte detected in associated method blank below the reporting limit. No material impact on reported result as sample is ND for this parameter.
BS	Blank spike recoveries did not meet acceptance limits.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
J	Estimated value
MS1.0	Matrix spike recoveries exceed control limits.
MS1.2	Matrix spike recovery exceeds lower control limit. Reported results for parent matrix should be considered estimated due to matrix interferences.
MS1.3	Matrix spike recovery data unavailable or unreliable due to significant dilution required for matrix interferences.
SR1.0	Surrogate recovery exceeds upper control limit. No material impact as associated analytes are Non-Detect.
SR4.1	Surrogate compound diluted outside of quantitation range due to matrix interferences. Recovery data unavailable or unreliable due to dilution.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

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Certificate of Analysis

Sample ID: A8H0251-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/01/18 - 11:00
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**8.4**		0.10	ug/L	1	A811433	08/08/18	08/12/18	
Copper	EPA 200.8 DRC	**15**		1.1	ug/L	1	A811433	08/08/18	08/10/18	
Nickel	EPA 200.8 DRC	**20**		1.0	ug/L	1	A811433	08/08/18	08/10/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A811411	08/08/18	08/12/18	
beta-BHC	EPA 608	ND	0.0011	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A811411	08/08/18	08/12/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	MS1.2
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Surrogate: TCMX	EPA 608	81 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	**1.5**		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H0251-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/01/18 - 11:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811265	08/03/18	08/03/18	
Acetone	EPA 624	**4.1**	1.4	20	ug/L	1	A811265	08/03/18	08/03/18	J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromodichloromethane	EPA 624	**1.6**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A811265	08/03/18	08/03/18	B2.1
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811265	08/03/18	08/03/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroform	EPA 624	**5.6**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloromethane	EPA 624	**0.63**	0.18	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Dibromochloromethane	EPA 624	**0.30**	0.085	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811265	08/03/18	08/03/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Ethylbenzene	EPA 624	**0.22**	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811265	08/03/18	08/03/18	
m,p-Xylenes	EPA 624	**0.89**	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
o-Xylene	EPA 624	**0.63**	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811265	08/03/18	08/03/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Toluene	EPA 624	**0.81**	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	100 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	99 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	99 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.70	10	ug/L	5	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0251-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/01/18 - 11:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2,4-Dimethylphenol	EPA 625	ND	0.76	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2,4-Dinitrophenol	EPA 625	ND	1.4	5.0	ug/L	5	A811413	08/08/18	08/14/18	
2,4-Dinitrotoluene	EPA 625	ND	0.50	5.0	ug/L	5	A811413	08/08/18	08/14/18	
2,6-Dinitrotoluene	EPA 625	ND	1.8	5.0	ug/L	5	A811413	08/08/18	08/14/18	
2-Chloronaphthalene	EPA 625	ND	0.50	10	ug/L	5	A811413	08/08/18	08/14/18	
2-Chlorophenol	EPA 625	ND	0.56	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2-Nitrophenol	EPA 625	ND	1.1	10	ug/L	5	A811413	08/08/18	08/14/18	
3,3-Dichlorobenzidine	EPA 625	ND	2.7	10	ug/L	5	A811413	08/08/18	08/14/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.0	ug/L	5	A811413	08/08/18	08/14/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.0	ug/L	5	A811413	08/08/18	08/14/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	1.2	5.0	ug/L	5	A811413	08/08/18	08/14/18	
4-Nitrophenol	EPA 625	ND	1.3	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Acenaphthene	EPA 625	ND	0.020	0.50	ug/L	5	A811413	08/08/18	08/14/18	
Acenaphthylene	EPA 625	ND	0.011	0.20	ug/L	5	A811413	08/08/18	08/14/18	
Anthracene	EPA 625	ND	0.0098	2.0	ug/L	5	A811413	08/08/18	08/14/18	
Benzidine	EPA 625	ND	7.0	25	ug/L	5	A811413	08/08/18	08/14/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.011	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(a)pyrene	EPA 625	ND	0.016	2.0	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(b)fluoranthene	EPA 625	ND	0.010	10	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.019	0.10	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(k)fluoranthene	EPA 625	ND	0.014	2.0	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.5	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Butyl benzyl phthalate	EPA 625	ND	0.50	10	ug/L	5	A811413	08/08/18	08/14/18	
Chrysene	EPA 625	ND	0.0057	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.016	0.10	ug/L	5	A811413	08/08/18	08/14/18	
Diethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Dimethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Di-n-butyl phthalate	EPA 625	ND	0.68	10	ug/L	5	A811413	08/08/18	08/14/18	
Di-n-octyl phthalate	EPA 625	ND	0.53	10	ug/L	5	A811413	08/08/18	08/14/18	
Fluoranthene	EPA 625	ND	0.0061	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Fluorene	EPA 625	ND	0.022	0.10	ug/L	5	A811413	08/08/18	08/14/18	
Hexachlorobenzene	EPA 625	ND	0.76	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Hexachlorobutadiene	EPA 625	ND	0.67	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.013	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Isophorone	EPA 625	ND	0.57	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Naphthalene	EPA 625	**0.16**	0.014	0.20	ug/L	5	A811413	08/08/18	08/14/18	J
Nitrobenzene	EPA 625	ND	0.53	2.5	ug/L	5	A811413	08/08/18	08/14/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.4	5.0	ug/L	5	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0251-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/01/18 - 11:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.0	ug/L	5	A811413	08/08/18	08/14/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.2	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Pentachlorophenol	EPA 625	ND	1.0	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Phenanthrene	EPA 625	ND	0.012	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Phenol	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Pyrene	EPA 625	ND	0.0072	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	204 %		*Acceptable range: 53-200 %*			*Qualifiers - SR4.1*			
Surrogate: 2-Fluorobiphenyl	EPA 625	89 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	78 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	103 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	88 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	99 %		*Acceptable range: 39-135 %*						

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H0251-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/01/18 - 11:10
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**2.2**		0.10	ug/L	1	A811433	08/08/18	08/12/18	
Copper	EPA 200.8 DRC	**4.3**		1.1	ug/L	1	A811433	08/08/18	08/10/18	
Nickel	EPA 200.8 DRC	**5.3**		1.0	ug/L	1	A811433	08/08/18	08/10/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A811411	08/08/18	08/12/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A811411	08/08/18	08/12/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A811411	08/08/18	08/12/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Surrogate: TCMX	EPA 608	73 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	

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Certificate of Analysis

Sample ID: A8H0251-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/01/18 - 11:10
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811265	08/03/18	08/03/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811265	08/03/18	08/03/18	
Acetone	EPA 624	ND	1.4	20	ug/L	1	A811265	08/03/18	08/03/18	
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromodichloromethane	EPA 624	**0.40**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	J
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A811265	08/03/18	08/03/18	B2.1
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811265	08/03/18	08/03/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloroform	EPA 624	**1.3**	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Chloromethane	EPA 624	**0.83**	0.18	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811265	08/03/18	08/03/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Dibromochloromethane	EPA 624	ND	0.085	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811265	08/03/18	08/03/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Ethylbenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811265	08/03/18	08/03/18	
m,p-Xylenes	EPA 624	ND	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811265	08/03/18	08/03/18	
o-Xylene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811265	08/03/18	08/03/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Toluene	EPA 624	**0.68**	0.14	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811265	08/03/18	08/03/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	100 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	103 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	99 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0251-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/01/18 - 11:10
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A811413	08/08/18	08/14/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A811413	08/08/18	08/14/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A811413	08/08/18	08/14/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A811413	08/08/18	08/14/18	
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A811413	08/08/18	08/14/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A811413	08/08/18	08/14/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A811413	08/08/18	08/14/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A811413	08/08/18	08/14/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A811413	08/08/18	08/14/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A811413	08/08/18	08/14/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A811413	08/08/18	08/14/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A811413	08/08/18	08/14/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Naphthalene	EPA 625	**0.043**	0.0027	0.20	ug/L	1	A811413	08/08/18	08/14/18	J
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A811413	08/08/18	08/14/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0251-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/01/18 - 11:10
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	214 %		*Acceptable range: 53-200 %*			*Qualifiers - SR1.0*			
Surrogate: 2-Fluorobiphenyl	EPA 625	80 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	83 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	89 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	88 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	89 %		*Acceptable range: 39-135 %*						

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK Associates Laboratory Fresno
Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A811433											Prepared: 8/8/2018	
Prep Method: EPA 200.2 DRC											Analyst: MAS	
Blank (A811433-BLK1)												
Copper	ND		1.1	ug/L							08/10/18	
Nickel	ND		1.0	ug/L							08/10/18	
Blank (A811433-BLK2)												
Arsenic	ND		0.10	ug/L							08/12/18	
Blank Spike (A811433-BS1)												
Copper	50		1.1	ug/L	50		101	85-115			08/10/18	
Nickel	51		1.0	ug/L	50		102	85-115			08/10/18	
Blank Spike (A811433-BS2)												
Arsenic	48		0.10	ug/L	50		96	85-115			08/12/18	
Blank Spike Dup (A811433-BSD1)												
Copper	50		1.1	ug/L	50		100	85-115	0	20	08/10/18	
Nickel	51		1.0	ug/L	50		102	85-115	0	20	08/10/18	
Blank Spike Dup (A811433-BSD2)												
Arsenic	48		0.10	ug/L	50		95	85-115	1	20	08/12/18	
Matrix Spike (A811433-MS1), Source: A8G3857-02												
Copper	48		1.1	ug/L	50	4.9	86	70-130			08/10/18	
Nickel	52		1.0	ug/L	50	5.4	93	70-130			08/10/18	
Matrix Spike (A811433-MS2), Source: A8H0662-02												
Copper	44		1.1	ug/L	50	2.6	83	70-130			08/10/18	
Nickel	51		1.0	ug/L	50	6.2	90	70-130			08/10/18	
Matrix Spike (A811433-MS3), Source: A8G3857-02												
Arsenic	50		0.10	ug/L	50	2.3	96	70-130			08/12/18	
Matrix Spike Dup (A811433-MSD1), Source: A8G3857-02												
Copper	48		1.1	ug/L	50	4.9	85	70-130	0	20	08/10/18	
Nickel	51		1.0	ug/L	50	5.4	92	70-130	1	20	08/10/18	
Matrix Spike Dup (A811433-MSD2), Source: A8H0662-02												
Copper	45		1.1	ug/L	50	2.6	84	70-130	1	20	08/10/18	
Nickel	51		1.0	ug/L	50	6.2	90	70-130	0	20	08/10/18	
Matrix Spike Dup (A811433-MSD3), Source: A8G3857-02												
Arsenic	51		0.10	ug/L	50	2.3	97	70-130	1	20	08/12/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A811411											Prepared: 8/8/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank (A811411-BLK1)												
4,4'-DDD	ND	0.00072	0.0050	ug/L							08/11/18	
4,4'-DDE	ND	0.00061	0.0050	ug/L							08/11/18	
4,4'-DDT	ND	0.00070	0.0050	ug/L							08/11/18	
Aldrin	ND	0.00079	0.0050	ug/L							08/11/18	
alpha-BHC	ND	0.0025	0.0050	ug/L							08/11/18	
Aroclor-1016	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1221	ND	0.063	0.10	ug/L							08/11/18	
Aroclor-1232	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1242	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1248	ND	0.020	0.10	ug/L							08/11/18	
Aroclor-1254	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1260	ND	0.015	0.10	ug/L							08/11/18	
beta-BHC	ND	0.00054	0.0050	ug/L							08/11/18	
Chlordane	ND	0.026	0.10	ug/L							08/11/18	
delta-BHC	ND	0.00060	0.0050	ug/L							08/11/18	
Dieldrin	ND	0.00097	0.0050	ug/L							08/11/18	
Endosulfan I	ND	0.00089	0.0050	ug/L							08/11/18	
Endosulfan II	ND	0.0018	0.0050	ug/L							08/11/18	
Endosulfan Sulfate	ND	0.00074	0.0050	ug/L							08/11/18	
Endrin	ND	0.00081	0.0050	ug/L							08/11/18	
Endrin Aldehyde	ND	0.00067	0.0050	ug/L							08/11/18	
Heptachlor	ND	0.00069	0.0050	ug/L							08/11/18	
Heptachlor Epoxide	ND	0.00069	0.0050	ug/L							08/11/18	
Lindane	ND	0.0025	0.0050	ug/L							08/11/18	
Toxaphene	ND	0.035	0.10	ug/L							08/11/18	
Surrogate: TCMX	*0.22*				*0.30*		*72*	*26-144*			08/11/18	
Blank Spike (A811411-BS1)												
4,4'-DDD	0.037	0.00072	0.0050	ug/L	0.040		93	63-146			08/11/18	
4,4'-DDE	0.036	0.00061	0.0050	ug/L	0.040		91	49-150			08/11/18	
4,4'-DDT	0.035	0.00070	0.0050	ug/L	0.040		88	66-146			08/11/18	
Aldrin	0.035	0.00079	0.0050	ug/L	0.040		87	24-144			08/11/18	
alpha-BHC	0.034	0.0025	0.0050	ug/L	0.040		85	32-176			08/11/18	
beta-BHC	0.037	0.00054	0.0050	ug/L	0.040		93	59-152			08/11/18	
delta-BHC	0.033	0.00060	0.0050	ug/L	0.040		82	46-156			08/11/18	
Dieldrin	0.035	0.00097	0.0050	ug/L	0.040		87	62-146			08/11/18	
Endosulfan I	0.037	0.00089	0.0050	ug/L	0.040		94	53-151			08/11/18	
Endosulfan II	0.038	0.0018	0.0050	ug/L	0.040		94	63-144			08/11/18	
Endosulfan Sulfate	0.036	0.00074	0.0050	ug/L	0.040		91	65-145			08/11/18	
Endrin	0.035	0.00081	0.0050	ug/L	0.040		88	55-153			08/11/18	
Endrin Aldehyde	0.032	0.00067	0.0050	ug/L	0.040		79	68-128			08/11/18	
Heptachlor	0.042	0.00069	0.0050	ug/L	0.040		105	34-147			08/11/18	
Heptachlor Epoxide	0.037	0.00069	0.0050	ug/L	0.040		92	57-150			08/11/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A811411											Prepared: 8/8/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank Spike (A811411-BS1)												
Lindane	0.034	0.0025	0.0050	ug/L	0.040		86	58-148			08/11/18	
Surrogate: TCMX	*0.22*				*0.30*		*73*	*26-144*			08/11/18	
Blank Spike Dup (A811411-BSD1)												
4,4'-DDD	0.039	0.00072	0.0050	ug/L	0.040		98	63-146	5	20	08/11/18	
4,4'-DDE	0.038	0.00061	0.0050	ug/L	0.040		94	49-150	4	20	08/11/18	
4,4'-DDT	0.036	0.00070	0.0050	ug/L	0.040		91	66-146	4	20	08/11/18	
Aldrin	0.036	0.00079	0.0050	ug/L	0.040		90	24-144	4	20	08/11/18	
alpha-BHC	0.034	0.0025	0.0050	ug/L	0.040		85	32-176	1	20	08/11/18	
beta-BHC	0.037	0.00054	0.0050	ug/L	0.040		93	59-152	1	20	08/11/18	
delta-BHC	0.034	0.00060	0.0050	ug/L	0.040		85	46-156	3	20	08/11/18	
Dieldrin	0.037	0.00097	0.0050	ug/L	0.040		92	62-146	6	20	08/11/18	
Endosulfan I	0.038	0.00089	0.0050	ug/L	0.040		96	53-151	2	20	08/11/18	
Endosulfan II	0.041	0.0018	0.0050	ug/L	0.040		102	63-144	8	20	08/11/18	
Endosulfan Sulfate	0.037	0.00074	0.0050	ug/L	0.040		92	65-145	2	20	08/11/18	
Endrin	0.039	0.00081	0.0050	ug/L	0.040		96	55-153	9	20	08/11/18	
Endrin Aldehyde	0.032	0.00067	0.0050	ug/L	0.040		80	68-128	1	20	08/11/18	
Heptachlor	0.042	0.00069	0.0050	ug/L	0.040		104	34-147	1	20	08/11/18	
Heptachlor Epoxide	0.037	0.00069	0.0050	ug/L	0.040		94	57-150	2	20	08/11/18	
Lindane	0.035	0.0025	0.0050	ug/L	0.040		89	58-148	4	20	08/11/18	
Surrogate: TCMX	*0.22*				*0.30*		*74*	*26-144*			08/11/18	
Matrix Spike (A811411-MS1), Source: A8H0251-01												
4,4'-DDD	0.023	0.00072	0.0050	ug/L	0.039	ND	60	63-146			08/12/18	MS1.0 ***Low***
4,4'-DDE	0.020	0.00061	0.0050	ug/L	0.039	ND	51	49-150			08/12/18	
4,4'-DDT	0.024	0.00070	0.0050	ug/L	0.039	ND	62	66-146			08/12/18	MS1.0 ***Low***
Aldrin	0.074	0.00079	0.0050	ug/L	0.039	ND	191	24-144			08/12/18	MS1.0 ***High***
alpha-BHC	0.030	0.0025	0.0050	ug/L	0.039	ND	77	32-176			08/12/18	
beta-BHC	0.034	0.00054	0.0050	ug/L	0.039	ND	89	59-152			08/12/18	
delta-BHC	0.036	0.00060	0.0050	ug/L	0.039	ND	92	46-156			08/12/18	
Dieldrin	0.023	0.00097	0.0050	ug/L	0.039	ND	60	62-146			08/12/18	MS1.0 ***Low***
Endosulfan I	ND	0.00089	0.0050	ug/L	0.039	ND	0	53-151			08/12/18	MS1.0 ***Low***
Endosulfan II	0.025	0.0018	0.0050	ug/L	0.039	ND	65	63-144			08/12/18	
Endosulfan Sulfate	ND	0.00074	0.0050	ug/L	0.039	ND	0	65-145			08/12/18	MS1.0 ***Low***
Endrin	0.032	0.00081	0.0050	ug/L	0.039	ND	81	55-153			08/12/18	
Endrin Aldehyde	ND	0.00067	0.0050	ug/L	0.039	ND	0	68-128			08/12/18	MS1.0 ***Low***
Heptachlor	0.036	0.00069	0.0050	ug/L	0.039	ND	93	34-147			08/12/18	
Heptachlor Epoxide	ND	0.00069	0.0050	ug/L	0.039	ND	0	57-150			08/12/18	MS1.0 ***Low***
Lindane	0.045	0.0025	0.0050	ug/L	0.039	ND	117	58-148			08/12/18	
Surrogate: TCMX	*0.24*				*0.29*		*81*	*26-144*			08/12/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811265-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							08/03/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							08/03/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							08/03/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							08/03/18	
1,1-Dichloroethene	ND	0.12	0.50	ug/L							08/03/18	
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							08/03/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							08/03/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							08/03/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							08/03/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							08/03/18	
2-Butanone	ND	1.2	20	ug/L							08/03/18	
2-Hexanone	ND	1.2	20	ug/L							08/03/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							08/03/18	
Acetone	ND	1.4	5.0	ug/L							08/03/18	
Benzene	ND	0.15	0.50	ug/L							08/03/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							08/03/18	
Bromoform	ND	0.14	0.50	ug/L							08/03/18	
Bromomethane	0.36	0.19	1.0	ug/L							08/03/18	J, B2.0
Carbon disulfide	ND	1.6	5.0	ug/L							08/03/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							08/03/18	
Chlorobenzene	ND	0.13	0.50	ug/L							08/03/18	
Chloroethane	ND	0.13	0.50	ug/L							08/03/18	
Chloroform	ND	0.10	0.50	ug/L							08/03/18	
Chloromethane	ND	0.18	0.50	ug/L							08/03/18	
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							08/03/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							08/03/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							08/03/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							08/03/18	
Dichloromethane	ND	0.11	0.50	ug/L							08/03/18	
Ethylbenzene	ND	0.13	0.50	ug/L							08/03/18	
Hexachloroethane	ND	0.15	1.0	ug/L							08/03/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							08/03/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							08/03/18	
o-Xylene	ND	0.12	0.50	ug/L							08/03/18	
Styrene	ND	0.16	0.50	ug/L							08/03/18	
Tetrachloroethene (PCE)	ND	0.11	0.50	ug/L							08/03/18	
Toluene	ND	0.14	0.50	ug/L							08/03/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							08/03/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							08/03/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							08/03/18	
Trichlorofluoromethane	ND	0.12	0.50	ug/L							08/03/18	
Vinyl Chloride	ND	0.15	0.50	ug/L							08/03/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811265-BLK1)												
Surrogate: 1,2-Dichloroethane-d4	*49*				*50*		*98*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*52*				*50*		*104*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*49*				*50*		*97*	*70-130*			08/03/18	
Blank Spike (A811265-BS1)												
1,1,1-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-162			08/03/18	
1,1,2,2-Tetrachloroethane	9.1	0.12	0.50	ug/L	10		91	46-157			08/03/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		101	52-150			08/03/18	
1,1-Dichloroethane	9.9	0.11	0.50	ug/L	10		99	59-155			08/03/18	
1,1-Dichloroethene	10	0.12	0.50	ug/L	10		104	10-234			08/03/18	
1,2-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190			08/03/18	
1,2-Dichloroethane	9.8	0.10	0.50	ug/L	10		98	49-155			08/03/18	
1,2-Dichloropropane	9.9	0.12	0.50	ug/L	10		99	10-210			08/03/18	
1,3-Dichlorobenzene	9.7	0.11	0.50	ug/L	10		97	59-156			08/03/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		100	18-190			08/03/18	
2-Butanone	9.1	1.2	20	ug/L	10		91	46-156			08/03/18	J
2-Hexanone	10	1.2	20	ug/L	10		102	56-135			08/03/18	J
4-Methyl-2-pentanone	9.6	0.97	20	ug/L	10		96	67-136			08/03/18	J
Acetone	10	1.4	5.0	ug/L	10		101	19-194			08/03/18	
Benzene	9.9	0.15	0.50	ug/L	10		99	37-151			08/03/18	
Bromodichloromethane	9.7	0.10	0.50	ug/L	10		97	35-155			08/03/18	
Bromoform	9.9	0.14	0.50	ug/L	10		99	45-169			08/03/18	
Bromomethane	12	0.19	1.0	ug/L	10		116	10-242			08/03/18	
Carbon disulfide	10	1.6	5.0	ug/L	10		103	78-140			08/03/18	
Carbon Tetrachloride	9.4	0.10	0.50	ug/L	10		94	70-140			08/03/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		102	37-160			08/03/18	
Chloroethane	10	0.13	0.50	ug/L	10		100	14-230			08/03/18	
Chloroform	10	0.10	0.50	ug/L	10		102	51-138			08/03/18	
Chloromethane	12	0.18	0.50	ug/L	10		116	10-273			08/03/18	
cis-1,2-Dichloroethene	9.9	0.10	0.50	ug/L	10		99	81-130			08/03/18	
cis-1,3-Dichloropropene	9.8	0.11	0.50	ug/L	10		98	10-227			08/03/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		100	53-149			08/03/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		106	52-171			08/03/18	
Dichloromethane	9.7	0.11	0.50	ug/L	10		97	10-221			08/03/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		104	37-162			08/03/18	
Hexachloroethane	11	0.15	1.0	ug/L	10		107	78-145			08/03/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		103	83-108			08/03/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20		98	79-131			08/03/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115			08/03/18	
Styrene	10	0.16	0.50	ug/L	10		100	78-117			08/03/18	
Tetrachloroethene (PCE)	14	0.11	0.50	ug/L	10		139	64-148			08/03/18	
Toluene	10	0.14	0.50	ug/L	10		103	47-150			08/03/18	
trans-1,2-Dichloroethene	9.9	0.13	0.50	ug/L	10		99	54-156			08/03/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A811265-BS1)												
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		100	17-183			08/03/18	
Trichloroethene (TCE)	9.7	0.13	0.50	ug/L	10		97	71-157			08/03/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		105	17-181			08/03/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10		106	10-251			08/03/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*52*				*50*		*103*	*70-130*			08/03/18	
Blank Spike Dup (A811265-BSD1)												
1,1,1-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-162	0	30	08/03/18	
1,1,2,2-Tetrachloroethane	9.5	0.12	0.50	ug/L	10		95	46-157	4	30	08/03/18	
1,1,2-Trichloroethane	9.6	0.14	0.50	ug/L	10		96	52-150	5	30	08/03/18	
1,1-Dichloroethane	9.9	0.11	0.50	ug/L	10		99	59-155	0	30	08/03/18	
1,1-Dichloroethene	10	0.12	0.50	ug/L	10		103	10-234	1	30	08/03/18	
1,2-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190	0	30	08/03/18	
1,2-Dichloroethane	9.8	0.10	0.50	ug/L	10		98	49-155	0	30	08/03/18	
1,2-Dichloropropane	9.9	0.12	0.50	ug/L	10		99	10-210	0	30	08/03/18	
1,3-Dichlorobenzene	9.3	0.11	0.50	ug/L	10		93	59-156	4	30	08/03/18	
1,4-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190	1	30	08/03/18	
2-Butanone	9.7	1.2	20	ug/L	10		97	46-156	6	30	08/03/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135	3	30	08/03/18	J
4-Methyl-2-pentanone	9.9	0.97	20	ug/L	10		99	67-136	3	30	08/03/18	J
Acetone	10	1.4	5.0	ug/L	10		105	19-194	3	30	08/03/18	
Benzene	9.8	0.15	0.50	ug/L	10		98	37-151	1	30	08/03/18	
Bromodichloromethane	9.8	0.10	0.50	ug/L	10		98	35-155	1	30	08/03/18	
Bromoform	10	0.14	0.50	ug/L	10		101	45-169	2	30	08/03/18	
Bromomethane	12	0.19	1.0	ug/L	10		120	10-242	3	30	08/03/18	
Carbon disulfide	10	1.6	5.0	ug/L	10		102	78-140	1	30	08/03/18	
Carbon Tetrachloride	9.3	0.10	0.50	ug/L	10		93	70-140	1	30	08/03/18	
Chlorobenzene	9.9	0.13	0.50	ug/L	10		99	37-160	4	30	08/03/18	
Chloroethane	9.9	0.13	0.50	ug/L	10		99	14-230	0	30	08/03/18	
Chloroform	9.6	0.10	0.50	ug/L	10		96	51-138	6	30	08/03/18	
Chloromethane	11	0.18	0.50	ug/L	10		110	10-273	5	30	08/03/18	
cis-1,2-Dichloroethene	9.9	0.10	0.50	ug/L	10		99	81-130	0	30	08/03/18	
cis-1,3-Dichloropropene	9.8	0.11	0.50	ug/L	10		98	10-227	0	30	08/03/18	
Dibromochloromethane	9.6	0.085	0.50	ug/L	10		96	53-149	4	30	08/03/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		105	52-171	1	30	08/03/18	
Dichloromethane	9.7	0.11	0.50	ug/L	10		97	10-221	1	30	08/03/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		101	37-162	3	30	08/03/18	
Hexachloroethane	11	0.15	1.0	ug/L	10		106	78-145	1	30	08/03/18	
m,p-Xylenes	20	0.22	0.50	ug/L	20		99	83-108	4	30	08/03/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20		98	79-131	0	30	08/03/18	
o-Xylene	9.9	0.12	0.50	ug/L	10		99	81-115	4	30	08/03/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A811265-BSD1)												
Styrene	9.6	0.16	0.50	ug/L	10		96	78-117	5	30	08/03/18	
Tetrachloroethene (PCE)	13	0.11	0.50	ug/L	10		130	64-148	7	30	08/03/18	
Toluene	9.8	0.14	0.50	ug/L	10		98	47-150	5	30	08/03/18	
trans-1,2-Dichloroethene	9.9	0.13	0.50	ug/L	10		99	54-156	1	30	08/03/18	
trans-1,3-Dichloropropene	9.7	0.12	0.50	ug/L	10		97	17-183	4	30	08/03/18	
Trichloroethene (TCE)	9.4	0.13	0.50	ug/L	10		94	71-157	3	30	08/03/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		105	17-181	0	30	08/03/18	
Vinyl Chloride	10	0.15	0.50	ug/L	10		105	10-251	1	30	08/03/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*101*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*50*				*50*		*100*	*70-130*			08/03/18	
Matrix Spike (A811265-MS1), Source: A8H0445-01												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10	ND	115	52-162			08/03/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10	ND	101	46-157			08/03/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	100	52-150			08/03/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10	ND	110	59-155			08/03/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10	ND	119	10-234			08/03/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	104	18-190			08/03/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10	ND	106	49-155			08/03/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10	ND	109	10-210			08/03/18	
1,3-Dichlorobenzene	11	0.11	0.50	ug/L	10	ND	110	59-156			08/03/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	104	18-190			08/03/18	
2-Butanone	9.2	1.2	20	ug/L	10	ND	92	46-156			08/03/18	J
2-Hexanone	10	1.2	20	ug/L	10	ND	100	56-135			08/03/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10	ND	107	67-136			08/03/18	J
Acetone	16	1.4	5.0	ug/L	10	7.5	87	19-194			08/03/18	
Benzene	11	0.15	0.50	ug/L	10	ND	110	37-151			08/03/18	
Bromodichloromethane	10	0.10	0.50	ug/L	10	ND	105	35-155			08/03/18	
Bromoform	9.7	0.14	0.50	ug/L	10	ND	97	45-169			08/03/18	
Bromomethane	6.9	0.19	1.0	ug/L	10	ND	69	10-242			08/03/18	
Carbon disulfide	11	1.6	5.0	ug/L	10	ND	110	78-140			08/03/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10	ND	110	70-140			08/03/18	
Chlorobenzene	10	0.13	0.50	ug/L	10	ND	105	37-160			08/03/18	
Chloroethane	11	0.13	0.50	ug/L	10	ND	113	14-230			08/03/18	
Chloroform	10	0.10	0.50	ug/L	10	ND	100	51-138			08/03/18	
Chloromethane	11	0.18	0.50	ug/L	10	0.21	110	10-273			08/03/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10	ND	108	81-130			08/03/18	
cis-1,3-Dichloropropene	10	0.11	0.50	ug/L	10	ND	101	10-227			08/03/18	
Dibromochloromethane	9.9	0.085	0.50	ug/L	10	ND	99	53-149			08/03/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10	0.15	108	52-171			08/03/18	
Dichloromethane	11	0.11	0.50	ug/L	10	ND	106	10-221			08/03/18	
Ethylbenzene	11	0.13	0.50	ug/L	10	ND	109	37-162			08/03/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811265											Prepared: 8/3/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A811265-MS1), Source: A8H0445-01												
Hexachloroethane	15	0.15	1.0	ug/L	10	0.37	144	78-145			08/03/18	
m,p-Xylenes	22	0.22	0.50	ug/L	20	0.26	106	83-108			08/03/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20	ND	102	79-131			08/03/18	
o-Xylene	11	0.12	0.50	ug/L	10	ND	105	81-115			08/03/18	
Styrene	10	0.16	0.50	ug/L	10	ND	101	78-117			08/03/18	
Tetrachloroethene (PCE)	9.8	0.11	0.50	ug/L	10	ND	98	64-148			08/03/18	
Toluene	11	0.14	0.50	ug/L	10	0.38	107	47-150			08/03/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10	ND	112	54-156			08/03/18	
trans-1,3-Dichloropropene	9.6	0.12	0.50	ug/L	10	ND	96	17-183			08/03/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10	ND	107	71-157			08/03/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10	0.16	116	17-181			08/03/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10	ND	114	10-251			08/03/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/03/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*100*	*70-130*			08/03/18	
Surrogate: Toluene-d8	*49*				*50*		*97*	*70-130*			08/03/18	
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A811413-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	1.0	ug/L							08/13/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	1.0	ug/L							08/13/18	
2,4,6-Trichlorophenol	ND	0.14	10	ug/L							08/13/18	
2,4-Dichlorophenol	ND	0.10	1.0	ug/L							08/13/18	
2,4-Dimethylphenol	ND	0.15	1.0	ug/L							08/13/18	
2,4-Dinitrophenol	ND	0.27	5.0	ug/L							08/13/18	
2,4-Dinitrotoluene	ND	0.10	5.0	ug/L							08/13/18	
2,6-Dinitrotoluene	ND	0.36	5.0	ug/L							08/13/18	
2-Chloronaphthalene	ND	0.10	10	ug/L							08/13/18	
2-Chlorophenol	ND	0.11	2.0	ug/L							08/13/18	
2-Nitrophenol	ND	0.21	10	ug/L							08/13/18	
3,3-Dichlorobenzidine	ND	0.54	5.0	ug/L							08/13/18	
4,6-Dinitro-2-methylphenol	ND	0.11	5.0	ug/L							08/13/18	
4-Bromophenyl phenyl ether	ND	0.10	5.0	ug/L							08/13/18	
4-Chloro-3-methylphenol	ND	0.10	1.0	ug/L							08/13/18	
4-Chlorophenyl phenyl ether	ND	0.23	5.0	ug/L							08/13/18	
4-Nitrophenol	ND	0.26	5.0	ug/L							08/13/18	
Acenaphthene	ND	0.0040	0.50	ug/L							08/13/18	
Acenaphthylene	ND	0.0023	0.20	ug/L							08/13/18	
Anthracene	ND	0.0020	2.0	ug/L							08/13/18	
Benzidine	ND	1.4	5.0	ug/L							08/13/18	
Benzo(a)anthracene	ND	0.0023	5.0	ug/L							08/13/18	

BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A811413-BLK1)												
Benzo(a)pyrene	ND	0.0033	2.0	ug/L							08/13/18	
Benzo(b)fluoranthene	ND	0.0021	10	ug/L							08/13/18	
Benzo(g,h,i)perylene	ND	0.0039	0.10	ug/L							08/13/18	
Benzo(k)fluoranthene	ND	0.0028	2.0	ug/L							08/13/18	
Bis(2-chloroethoxy)methane	ND	0.10	5.0	ug/L							08/13/18	
Bis(2-chloroethyl) ether	ND	0.15	1.0	ug/L							08/13/18	
Bis(2-chloroisopropyl) ether	ND	0.13	2.0	ug/L							08/13/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	5.0	ug/L							08/13/18	
Butyl benzyl phthalate	ND	0.10	10	ug/L							08/13/18	
Chrysene	ND	0.0011	5.0	ug/L							08/13/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.10	ug/L							08/13/18	
Diethyl phthalate	ND	0.10	2.0	ug/L							08/13/18	
Dimethyl phthalate	ND	0.10	2.0	ug/L							08/13/18	
Di-n-butyl phthalate	ND	0.14	10	ug/L							08/13/18	
Di-n-octyl phthalate	ND	0.11	10	ug/L							08/13/18	
Fluoranthene	ND	0.0012	0.050	ug/L							08/13/18	
Fluorene	ND	0.0043	0.10	ug/L							08/13/18	
Hexachlorobenzene	ND	0.15	1.0	ug/L							08/13/18	
Hexachlorobutadiene	ND	0.13	1.0	ug/L							08/13/18	
Hexachlorocyclopentadiene	ND	0.14	5.0	ug/L							08/13/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.050	ug/L							08/13/18	
Isophorone	ND	0.11	1.0	ug/L							08/13/18	
Naphthalene	ND	0.0027	0.20	ug/L							08/13/18	
Nitrobenzene	ND	0.11	1.0	ug/L							08/13/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	5.0	ug/L							08/13/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	5.0	ug/L							08/13/18	
N-Nitrosodiphenylamine (as DPA)	ND	0.24	1.0	ug/L							08/13/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							08/13/18	
Phenanthrene	ND	0.0024	0.050	ug/L							08/13/18	
Phenol	ND	0.10	1.0	ug/L							08/13/18	
Pyrene	ND	0.0014	0.050	ug/L							08/13/18	
Surrogate: 2,4,6-Tribromophenol	*7.1*				*5.0*		*142*	*53-200*			08/13/18	
Surrogate: 2-Fluorobiphenyl	*4.2*				*5.0*		*85*	*40-127*			08/13/18	
Surrogate: 2-Fluorophenol	*4.4*				*5.0*		*88*	*42-123*			08/13/18	
Surrogate: Nitrobenzene-d5	*2.8*				*5.0*		*55*	*49-133*			08/13/18	
Surrogate: Phenol-d6	*4.9*				*5.0*		*97*	*52-125*			08/13/18	
Surrogate: p-Terphenyl-d14	*4.7*				*5.0*		*95*	*39-135*			08/13/18	
Blank Spike (A811413-BS1)												
1,2,4-Trichlorobenzene	3.5	0.10	1.0	ug/L	5.0		69	44-142			08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.4	0.10	1.0	ug/L	5.0		69	30-130			08/14/18	
2,4,6-Trichlorophenol	4.2	0.14	10	ug/L	5.0		83	37-144			08/14/18	J
2,4-Dichlorophenol	4.0	0.10	1.0	ug/L	5.0		80	39-135			08/14/18	
2,4-Dimethylphenol	2.9	0.15	1.0	ug/L	5.0		57	10-175			08/14/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A811413											Prepared: 8/8/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike (A811413-BS1)													
2,4-Dinitrophenol	3.7	0.27	5.0	ug/L	5.0		75	10-191			08/14/18	J	
2,4-Dinitrotoluene	5.0	0.10	5.0	ug/L	5.0		100	39-139			08/14/18		
2,6-Dinitrotoluene	4.8	0.36	5.0	ug/L	5.0		96	50-158			08/14/18	J	
2-Chloronaphthalene	4.1	0.10	10	ug/L	5.0		81	60-118			08/14/18	J	
2-Chlorophenol	3.7	0.11	2.0	ug/L	5.0		74	23-134			08/14/18		
2-Nitrophenol	4.0	0.21	10	ug/L	5.0		80	29-182			08/14/18	J	
3,3-Dichlorobenzidine	11	0.54	5.0	ug/L	20		54	10-200			08/14/18		
4,6-Dinitro-2-methylphenol	3.5	0.11	5.0	ug/L	5.0		71	10-181			08/14/18	J	
4-Bromophenyl phenyl ether	4.9	0.10	5.0	ug/L	5.0		97	53-127			08/14/18	J	
4-Chloro-3-methylphenol	3.5	0.10	1.0	ug/L	5.0		70	22-147			08/14/18		
4-Chlorophenyl phenyl ether	4.5	0.23	5.0	ug/L	5.0		89	25-158			08/14/18	J	
4-Nitrophenol	4.7	0.26	5.0	ug/L	5.0		94	10-132			08/14/18	J	
Acenaphthene	0.081	0.0040	0.50	ug/L	0.10		81	47-145			08/14/18	J	
Acenaphthylene	0.064	0.0023	0.20	ug/L	0.10		64	33-145			08/14/18	J	
Anthracene	0.093	0.0020	2.0	ug/L	0.10		93	27-133			08/14/18	J	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			08/14/18	BS	*Low*
Benzo(a)anthracene	0.089	0.0023	5.0	ug/L	0.10		89	33-143			08/14/18	J	
Benzo(a)pyrene	0.079	0.0033	2.0	ug/L	0.10		79	17-163			08/14/18	J	
Benzo(b)fluoranthene	0.12	0.0021	10	ug/L	0.10		121	24-159			08/14/18	J	
Benzo(g,h,i)perylene	0.10	0.0039	0.10	ug/L	0.10		103	10-200			08/14/18		
Benzo(k)fluoranthene	0.094	0.0028	2.0	ug/L	0.10		94	11-162			08/14/18	J	
Bis(2-chloroethoxy)methane	4.3	0.10	5.0	ug/L	5.0		85	33-184			08/14/18	J	
Bis(2-chloroethyl) ether	4.1	0.15	1.0	ug/L	5.0		82	12-158			08/14/18		
Bis(2-chloroisopropyl) ether	4.2	0.13	2.0	ug/L	5.0		85	36-166			08/14/18		
Bis(2-ethylhexyl) phthalate	3.9	0.29	5.0	ug/L	5.0		78	10-158			08/14/18	J	
Butyl benzyl phthalate	2.6	0.10	10	ug/L	5.0		52	10-152			08/14/18	J	
Chrysene	0.088	0.0011	5.0	ug/L	0.10		88	17-168			08/14/18	J	
Dibenzo(a,h)anthracene	0.13	0.0031	0.10	ug/L	0.10		125	10-200			08/14/18		
Diethyl phthalate	2.7	0.10	2.0	ug/L	5.0		55	10-114			08/14/18		
Dimethyl phthalate	1.4	0.10	2.0	ug/L	5.0		28	10-112			08/14/18	J	
Di-n-butyl phthalate	3.7	0.14	10	ug/L	5.0		74	10-118			08/14/18	J	
Di-n-octyl phthalate	4.0	0.11	10	ug/L	5.0		80	10-146			08/14/18	J	
Fluoranthene	0.098	0.0012	0.050	ug/L	0.10		98	26-137			08/14/18		
Fluorene	0.088	0.0043	0.10	ug/L	0.10		88	59-121			08/14/18	J	
Hexachlorobenzene	4.7	0.15	1.0	ug/L	5.0		94	10-152			08/14/18		
Hexachlorobutadiene	3.3	0.13	1.0	ug/L	5.0		67	24-116			08/14/18		
Hexachlorocyclopentadiene	2.2	0.14	5.0	ug/L	5.0		44	10-130			08/14/18	J	
Indeno(1,2,3-cd)pyrene	0.11	0.0027	0.050	ug/L	0.10		106	10-171			08/14/18		
Isophorone	4.2	0.11	1.0	ug/L	5.0		84	21-196			08/14/18		
Naphthalene	0.079	0.0027	0.20	ug/L	0.10		79	21-133			08/14/18	J	
Nitrobenzene	4.9	0.11	1.0	ug/L	5.0		97	35-180			08/14/18		
N-Nitrosodimethylamine (NDMA)	3.3	0.48	5.0	ug/L	5.0		65	10-130			08/14/18	J	
N-Nitrosodi-n-propylamine (NDPA)	3.2	0.10	5.0	ug/L	5.0		65	10-200			08/14/18	J	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A811413-BS1)												
N-Nitrosodiphenylamine (as DPA)	4.1	0.24	1.0	ug/L	5.0		81	10-130			08/14/18	
Pentachlorophenol	4.2	0.20	1.0	ug/L	5.0		84	14-176			08/14/18	
Phenanthrene	0.086	0.0024	0.050	ug/L	0.10		86	54-120			08/14/18	
Phenol	3.9	0.10	1.0	ug/L	5.0		78	10-112			08/14/18	
Pyrene	0.088	0.0014	0.050	ug/L	0.10		88	52-115			08/14/18	
Surrogate: 2,4,6-Tribromophenol	*8.6*				*5.0*		*173*	*53-200*			08/14/18	
Surrogate: 2-Fluorobiphenyl	*4.1*				*5.0*		*82*	*40-127*			08/14/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*79*	*42-123*			08/14/18	
Surrogate: Nitrobenzene-d5	*4.3*				*5.0*		*86*	*49-133*			08/14/18	
Surrogate: Phenol-d6	*4.3*				*5.0*		*86*	*52-125*			08/14/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*88*	*39-135*			08/14/18	
Blank Spike Dup (A811413-BSD1)												
1,2,4-Trichlorobenzene	3.4	0.10	1.0	ug/L	5.0		67	44-142	3	30	08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.7	0.10	1.0	ug/L	5.0		74	30-130	8	30	08/14/18	
2,4,6-Trichlorophenol	4.2	0.14	10	ug/L	5.0		84	37-144	1	30	08/14/18	J
2,4-Dichlorophenol	4.2	0.10	1.0	ug/L	5.0		84	39-135	5	30	08/14/18	
2,4-Dimethylphenol	1.3	0.15	1.0	ug/L	5.0		25	10-175	78	30	08/14/18	BS3.0
2,4-Dinitrophenol	4.0	0.27	5.0	ug/L	5.0		79	10-191	6	30	08/14/18	J
2,4-Dinitrotoluene	4.8	0.10	5.0	ug/L	5.0		97	39-139	3	30	08/14/18	J
2,6-Dinitrotoluene	4.7	0.36	5.0	ug/L	5.0		94	50-158	2	30	08/14/18	J
2-Chloronaphthalene	4.0	0.10	10	ug/L	5.0		80	60-118	2	30	08/14/18	J
2-Chlorophenol	3.9	0.11	2.0	ug/L	5.0		77	23-134	5	30	08/14/18	
2-Nitrophenol	4.1	0.21	10	ug/L	5.0		81	29-182	1	30	08/14/18	J
3,3-Dichlorobenzidine	13	0.54	5.0	ug/L	20		63	10-200	14	30	08/14/18	
4,6-Dinitro-2-methylphenol	3.7	0.11	5.0	ug/L	5.0		74	10-181	4	30	08/14/18	J
4-Bromophenyl phenyl ether	4.6	0.10	5.0	ug/L	5.0		92	53-127	6	30	08/14/18	J
4-Chloro-3-methylphenol	1.5	0.10	1.0	ug/L	5.0		30	22-147	80	30	08/14/18	BS3.0
4-Chlorophenyl phenyl ether	4.2	0.23	5.0	ug/L	5.0		83	25-158	7	30	08/14/18	J
4-Nitrophenol	3.6	0.26	5.0	ug/L	5.0		71	10-132	28	30	08/14/18	J
Acenaphthene	0.082	0.0040	0.50	ug/L	0.10		82	47-145	1	30	08/14/18	J
Acenaphthylene	0.067	0.0023	0.20	ug/L	0.10		67	33-145	5	30	08/14/18	J
Anthracene	0.082	0.0020	2.0	ug/L	0.10		82	27-133	13	30	08/14/18	J
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	08/14/18	BS ***Low***
Benzo(a)anthracene	0.098	0.0023	5.0	ug/L	0.10		98	33-143	10	30	08/14/18	J
Benzo(a)pyrene	0.081	0.0033	2.0	ug/L	0.10		81	17-163	2	30	08/14/18	J
Benzo(b)fluoranthene	0.12	0.0021	10	ug/L	0.10		116	24-159	4	30	08/14/18	J
Benzo(g,h,i)perylene	0.097	0.0039	0.10	ug/L	0.10		97	10-200	6	30	08/14/18	J
Benzo(k)fluoranthene	0.092	0.0028	2.0	ug/L	0.10		92	11-162	2	30	08/14/18	J
Bis(2-chloroethoxy)methane	4.4	0.10	5.0	ug/L	5.0		89	33-184	4	30	08/14/18	J
Bis(2-chloroethyl) ether	4.5	0.15	1.0	ug/L	5.0		90	12-158	10	30	08/14/18	
Bis(2-chloroisopropyl) ether	4.3	0.13	2.0	ug/L	5.0		87	36-166	2	30	08/14/18	
Bis(2-ethylhexyl) phthalate	4.3	0.29	5.0	ug/L	5.0		86	10-158	10	30	08/14/18	J
Butyl benzyl phthalate	3.0	0.10	10	ug/L	5.0		61	10-152	16	30	08/14/18	J

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A811413-BSD1)												
Chrysene	0.092	0.0011	5.0	ug/L	0.10		92	17-168	5	30	08/14/18	J
Dibenzo(a,h)anthracene	0.12	0.0031	0.10	ug/L	0.10		117	10-200	6	30	08/14/18	
Diethyl phthalate	3.2	0.10	2.0	ug/L	5.0		63	10-114	14	30	08/14/18	
Dimethyl phthalate	1.8	0.10	2.0	ug/L	5.0		36	10-112	24	30	08/14/18	J
Di-n-butyl phthalate	3.9	0.14	10	ug/L	5.0		78	10-118	6	30	08/14/18	J
Di-n-octyl phthalate	4.3	0.11	10	ug/L	5.0		85	10-146	7	30	08/14/18	J
Fluoranthene	0.096	0.0012	0.050	ug/L	0.10		96	26-137	2	30	08/14/18	
Fluorene	0.086	0.0043	0.10	ug/L	0.10		86	59-121	3	30	08/14/18	J
Hexachlorobenzene	4.3	0.15	1.0	ug/L	5.0		86	10-152	8	30	08/14/18	
Hexachlorobutadiene	3.1	0.13	1.0	ug/L	5.0		62	24-116	7	30	08/14/18	
Hexachlorocyclopentadiene	2.2	0.14	5.0	ug/L	5.0		45	10-130	1	30	08/14/18	J
Indeno(1,2,3-cd)pyrene	0.10	0.0027	0.050	ug/L	0.10		101	10-171	4	30	08/14/18	
Isophorone	4.3	0.11	1.0	ug/L	5.0		86	21-196	2	30	08/14/18	
Naphthalene	0.079	0.0027	0.20	ug/L	0.10		79	21-133	0	30	08/14/18	J
Nitrobenzene	4.9	0.11	1.0	ug/L	5.0		99	35-180	1	30	08/14/18	
N-Nitrosodimethylamine (NDMA)	3.4	0.48	5.0	ug/L	5.0		68	10-130	4	30	08/14/18	J
N-Nitrosodi-n-propylamine (NDPA)	3.5	0.10	5.0	ug/L	5.0		71	10-200	9	30	08/14/18	J
N-Nitrosodiphenylamine (as DPA)	4.1	0.24	1.0	ug/L	5.0		83	10-130	2	30	08/14/18	
Pentachlorophenol	4.4	0.20	1.0	ug/L	5.0		89	14-176	6	30	08/14/18	
Phenanthrene	0.089	0.0024	0.050	ug/L	0.10		89	54-120	3	30	08/14/18	
Phenol	4.0	0.10	1.0	ug/L	5.0		79	10-112	1	30	08/14/18	
Pyrene	0.092	0.0014	0.050	ug/L	0.10		92	52-115	4	30	08/14/18	
Surrogate: 2,4,6-Tribromophenol	*4.2*				*5.0*		*84*	*53-200*			08/14/18	
Surrogate: 2-Fluorobiphenyl	*4.1*				*5.0*		*81*	*40-127*			08/14/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*80*	*42-123*			08/14/18	
Surrogate: Nitrobenzene-d5	*4.3*				*5.0*		*85*	*49-133*			08/14/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*87*	*52-125*			08/14/18	
Surrogate: p-Terphenyl-d14	*4.3*				*5.0*		*86*	*39-135*			08/14/18	
Matrix Spike (A811413-MS1), Source: A8H0251-01												
1,2,4-Trichlorobenzene	3.2	0.50	2.5	ug/L	4.9	ND	66	44-142			08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.1	0.50	2.5	ug/L	4.9	ND	63	30-130			08/14/18	
2,4,6-Trichlorophenol	4.7	0.70	10	ug/L	4.9	ND	95	37-144			08/14/18	J
2,4-Dichlorophenol	4.0	0.50	2.5	ug/L	4.9	ND	82	39-135			08/14/18	
2,4-Dimethylphenol	2.6	0.76	2.5	ug/L	4.9	ND	54	32-119			08/14/18	
2,4-Dinitrophenol	7.5	1.4	5.0	ug/L	4.9	ND	153	10-191			08/14/18	
2,4-Dinitrotoluene	5.9	0.50	5.0	ug/L	4.9	ND	120	39-139			08/14/18	
2,6-Dinitrotoluene	5.8	1.8	5.0	ug/L	4.9	ND	118	50-158			08/14/18	
2-Chloronaphthalene	3.7	0.50	10	ug/L	4.9	ND	75	60-118			08/14/18	J
2-Chlorophenol	3.8	0.56	2.5	ug/L	4.9	ND	77	23-134			08/14/18	
2-Nitrophenol	4.3	1.1	10	ug/L	4.9	ND	88	29-182			08/14/18	J
3,3-Dichlorobenzidine	ND	2.7	10	ug/L	20	ND	0	10-200			08/14/18	MS1.3 ***Low***
4,6-Dinitro-2-methylphenol	5.6	0.53	5.0	ug/L	4.9	ND	114	10-181			08/14/18	
4-Bromophenyl phenyl ether	4.7	0.50	5.0	ug/L	4.9	ND	97	53-127			08/14/18	J

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A811413-MS1), Source: A8H0251-01												
4-Chloro-3-methylphenol	4.7	0.50	2.5	ug/L	4.9	ND	96	22-147			08/14/18	
4-Chlorophenyl phenyl ether	4.4	1.2	5.0	ug/L	4.9	ND	91	25-158			08/14/18	J
4-Nitrophenol	5.8	1.3	5.0	ug/L	4.9	ND	119	10-132			08/14/18	
Acenaphthene	0.098	0.020	0.50	ug/L	0.098	ND	100	47-145			08/14/18	J
Acenaphthylene	0.080	0.011	0.20	ug/L	0.098	ND	82	33-145			08/14/18	J
Anthracene	0.094	0.0098	2.0	ug/L	0.098	ND	96	27-133			08/14/18	J
Benzidine	ND	7.0	25	ug/L	20	ND	0	10-200			08/14/18	MS1.3 ***Low***
Benzo(a)anthracene	0.070	0.011	5.0	ug/L	0.098	ND	72	33-143			08/14/18	J
Benzo(a)pyrene	0.085	0.016	2.0	ug/L	0.098	ND	87	17-163			08/14/18	J
Benzo(b)fluoranthene	0.13	0.010	10	ug/L	0.098	ND	128	24-159			08/14/18	J
Benzo(g,h,i)perylene	0.052	0.019	0.10	ug/L	0.098	ND	54	10-200			08/14/18	J
Benzo(k)fluoranthene	0.080	0.014	2.0	ug/L	0.098	ND	82	11-162			08/14/18	J
Bis(2-chloroethoxy)methane	3.9	0.50	5.0	ug/L	4.9	ND	80	33-184			08/14/18	J
Bis(2-chloroethyl) ether	3.6	0.74	2.5	ug/L	4.9	ND	73	12-158			08/14/18	
Bis(2-chloroisopropyl) ether	4.0	0.63	2.5	ug/L	4.9	ND	81	36-166			08/14/18	
Bis(2-ethylhexyl) phthalate	2.8	1.5	5.0	ug/L	4.9	ND	58	10-158			08/14/18	J
Butyl benzyl phthalate	3.9	0.50	10	ug/L	4.9	ND	79	10-152			08/14/18	J
Chrysene	0.071	0.0057	5.0	ug/L	0.098	ND	73	17-168			08/14/18	J
Dibenzo(a,h)anthracene	0.075	0.016	0.10	ug/L	0.098	ND	77	10-200			08/14/18	J
Diethyl phthalate	4.5	0.50	2.5	ug/L	4.9	ND	91	10-114			08/14/18	
Dimethyl phthalate	4.6	0.50	2.5	ug/L	4.9	ND	95	10-112			08/14/18	
Di-n-butyl phthalate	4.7	0.68	10	ug/L	4.9	ND	96	10-118			08/14/18	J
Di-n-octyl phthalate	3.1	0.53	10	ug/L	4.9	ND	63	10-146			08/14/18	J
Fluoranthene	0.11	0.0061	0.050	ug/L	0.098	ND	108	26-137			08/14/18	
Fluorene	0.11	0.022	0.10	ug/L	0.098	ND	112	59-121			08/14/18	
Hexachlorobenzene	4.5	0.76	2.5	ug/L	4.9	ND	92	10-152			08/14/18	
Hexachlorobutadiene	3.2	0.67	2.5	ug/L	4.9	ND	65	24-116			08/14/18	
Hexachlorocyclopentadiene	1.8	0.68	5.0	ug/L	4.9	ND	37	10-130			08/14/18	J
Indeno(1,2,3-cd)pyrene	0.087	0.013	0.050	ug/L	0.098	ND	89	10-171			08/14/18	
Isophorone	4.0	0.57	2.5	ug/L	4.9	ND	82	21-196			08/14/18	
Naphthalene	0.23	0.014	0.20	ug/L	0.098	0.16	72	21-133			08/14/18	
Nitrobenzene	4.5	0.53	2.5	ug/L	4.9	ND	93	35-180			08/14/18	
N-Nitrosodimethylamine (NDMA)	3.1	2.4	5.0	ug/L	4.9	ND	64	10-130			08/14/18	J
N-Nitrosodi-n-propylamine (NDPA)	3.9	0.51	5.0	ug/L	4.9	ND	80	10-200			08/14/18	J
N-Nitrosodiphenylamine (as DPA)	4.1	1.2	2.5	ug/L	4.9	ND	84	10-130			08/14/18	
Pentachlorophenol	6.7	1.0	5.0	ug/L	4.9	ND	137	14-176			08/14/18	
Phenanthrene	0.10	0.012	0.050	ug/L	0.098	ND	103	54-120			08/14/18	
Phenol	4.4	0.50	2.5	ug/L	4.9	ND	89	10-112			08/14/18	
Pyrene	0.092	0.0072	0.050	ug/L	0.098	ND	94	52-115			08/14/18	
Surrogate: 2,4,6-Tribromophenol	*9.5*				*4.9*		*195*	*53-200*			08/14/18	
Surrogate: 2-Fluorobiphenyl	*4.2*				*4.9*		*86*	*40-127*			08/14/18	
Surrogate: 2-Fluorophenol	*3.5*				*4.9*		*72*	*42-123*			08/14/18	
Surrogate: Nitrobenzene-d5	*4.7*				*4.9*		*97*	*49-133*			08/14/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A811413-MS1), Source: A8H0251-01												
Surrogate: Phenol-d6	*4.2*				*4.9*		*86*	*52-125*			08/14/18	
Surrogate: p-Terphenyl-d14	*4.6*				*4.9*		*93*	*39-135*			08/14/18	

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Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435				

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-002	State of California - ELAP	2993
State of Oregon - NELAP	4119-002				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-17

A8H0251

08022018

Abalo1080

Turnaround: Standard
Due Date: 8/16/2018

Abalone Coast Analytical, Inc.

Printed: 8/2/2018 4:01:59PM
Page 1 of 1

4.6 #GM

Abalo1080 10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

Rush Or

24 Hr	48 Hr	3 Day	5 Day	7 Day

Lab Reference # 18-4876

Client Full Name/ Business:	Address	City	State	Zip
City of Pismo Beach				
Bill To: **Same**				

Project:	R/O Brine Analysis	Phone #	(805)773-7075
Contact Full Name:	Russ Fleming	Fax #	
		Cell #	

Sign/Print Samplers Full Name: Hal Hix / Hailie Hix

	Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
1	R/O Brine	08/01/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	24	9x p/unp half gal, p/unp 1 liter	-1
		1100.	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
			Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
			3 Species Chronic Tox: Urchin, Kelp, Topsmelt			1x p/unp 5 gal	
2	R/O Feed Water	08/01/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
		1110	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
						3x VV/HCl, 1x VV/unp	

Relinquished By: Hal Hix	Received By:	Received By:	Lab:
Date/Time: 08/01/18	Date/Time: 8/1/18 1140	Date/Time: 8/2/18 1130	
Lab:	Lab:	Lab:	Lab: Lab:

Method Of Shipment:
Client ✓
Courier
Other:

Condition
Intact (y/n) Y
Sediment N
Temp. 19°C
On Ice (Yes) No

Lab use only	
Sent to:	
State Forms sent:	

Remarks:

ShareFile: ☐

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

GSO BI-FOAM-PAPER

A8H0251 08/02/2018
Abalo1080 10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

Rush (24 Hr | 48 Hr)

Lab Reference # 18-4876

Client Full Name/ Business: | Address | City | State | Zip

City of Pismo Beach

Bill To: **Same**

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name: Hal Hix, Hailie Hix

Project: **R/O Brine Analysis**
Contact Full Name: **Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	08/01/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	24	9x p/unp half gal, p/unp 1 liter	-1
	1100.	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
		Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
		3 Species Chronic Tox: Urchin, Kelp, Topsmelt			1x p/unp 5 gal	
R/O Feed Water	08/01/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
	1110	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
					3x VV/HCl, 1x VV/unp	

Relinquished By: Hal Hix	Received By:	Received By:	Lab:
Date/Time: 08/01/18	Date/Time: 8/1/18 1140	Date/Time:	
Lab:	Lab:	Lab:	Lab: Lab:

Method Of Shipment:
Client ✓
Courier
Other:

Condition
Intact (y/n) Y
Sediment N
Temp. 19°c
On Ice (Yes) No

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile: ☐

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

A8H0251
Abalo1080

08/02/2018
10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: Yes No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	Yes No NA	Were correct containers and preservatives received for the tests requested?	Yes No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No NA	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	Yes No NA Yes No NA
Did all bottles arrive unbroken and intact?	Yes No	Was a sufficient amount of sample received?	Yes No
Did all bottle labels agree with COC?	Yes No	Do samples have a hold time <72 hours?	Yes No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No NA	Was PM notified of discrepancies? PM: By/Time:	Yes No NA

Bottles Received ("_" means preservation/chlorine checks are either N/A or are performed in the lab)

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1-2			
Bacti $Na_2S_2O_3$	—	—				
None (P) White Cap	—	—	1C			
Cr6 (P) Lt. Green Label/Blue Cap NH4OH(NH4)2SO4 **DW**	Cl, pH > 8	P F				
Cr6 (P) Pink Label/Blue Cap NH4OH(NH4)2SO4 **WW**	pH 9.3-9.7	P F				
Cr6 (P) Black Label/Blue Cap NH4OH(NH4)2SO4 **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F				
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	3C			
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F				
NaOH (P) Green Cap	Cl, pH >10	P F				
NaOH + ZnAc (P)	pH > 9	P F				
Dissolved Oxygen 300ml (g)	—	—				
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C			
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	—	—				
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—				
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—				
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—				
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—				
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—				
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F				
NH_4Cl (AG) Purple Label 552	—	—				
EDA (AG) Brown Label **DBPs**	—	—				
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—	3V			
Buffer pH 4 (CG)	—	—				
H_3PO_4 (CG) Salmon Label	—	—				
Other:						
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—				
Bottled Water	—	—				
Clear Glass 250mL / 500mL / 1 Liter	—	—				
Solids: Brass / Steel / Plastic Bag	—	—				

8/2/18

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: LL @ 1444 Labels checked by: JR @ 1445 RUSH Paged by: _____ @ _____

External

A8H0251

CERES Analytical Laboratory, Inc.
4919 Windplay Dr Suite 1, El Dorado Hills, CA 95762

August 19, 2018

Ceres ID: 12248

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on August 7, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8H0251.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12248-001	R/O Brine A8H0251-01	8/7/2018	8/1/2018 11:00
12248-002	R/O Feed Water A8H0251-02	8/7/2018	8/1/2018 11:10

Section II: Data Summary

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Quality Assurance Sample Method Blank		Date Received: NA
	QC Batch #: 1838	Date Extracted: 8/16/2018
	Matrix: Waste Water	ZB-5MS Analysis: 8/17/2018
Project ID: A8H0251	Sample Size: 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.29	0.887	5.00	
12378-PeCDD	DL= 3.41	2.56	25.0	
123478-HxCDD	DL= 5.68	3.08	25.0	
123678-HxCDD	DL= 6.08	5.29	25.0	
123789-HxCDD	DL= 5.76	13.1	25.0	
1234678-HpCDD	DL= 4.19	5.15	25.0	
OCDD	DL= 5.85	8.50	50.0	
2,3,7,8-TCDF	DL= 2.04	0.733	5.00	
12378-PeCDF	DL= 3.27	2.96	25.0	
23478-PeCDF	DL= 3.21	5.40	25.0	
123478-HxCDF	DL= 2.57	3.93	25.0	
123678-HxCDF	DL= 3.01	2.94	25.0	
234678-HxCDF	DL= 2.93	4.32	25.0	
123789-HxCDF	DL= 3.83	4.70	25.0	
1234678-HpCDF	DL= 4.39	4.24	25.0	
1234789-HpCDF	DL= 6.03	5.74	25.0	
OCDF	DL= 5.44	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.29	
Total PeCDD	DL= 3.41	
Total HxCDD	DL= 6.08	
Total HpCDD	DL= 4.19	
Total TCDF	DL= 2.04	
Total PeCDF	DL= 3.27	
Total HxCDF	DL= 3.83	
Total HpCDF	DL= 6.03	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	109	25-164	
13C-12378-PeCDD	114	25-181	
13C-123478-HxCDD	88.8	32-141	
13C-123678-HxCDD	86.9	28-130	
13C-1234678-HpCDD	95.3	23-140	
13C-OCDD	87.5	17-157	
13C-2378-TCDF	143	24-169	
13C-12378-PeCDF	115	24-185	
13C-23478-PeCDF	105	21-178	
13C-123478-HxCDF	108	26-152	
13C-123678-HxCDF	97.1	26-123	
13C-234678-HxCDF	95.2	28-136	
13C-123789-HxCDF	90.5	29-147	
13C-1234678-HpCDF	92.9	28-143	
13C-1234789-HpCDF	87.2	26-138	

CRS

37Cl4-2378-TCDD	83.1	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery	QC Batch #: 1838 Matrix: Waste Water	Date Received: NA Date Extracted: 8/16/2018
Project ID: A8H0251	Sample Size: 1.000 L	ZB-5MS Analysis: 8/17/2018

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	10.2	6.7-15.8	13C-2378-TCDD	105	20-175
12378-PeCDD	52.5	35-71	13C-12378-PeCDD	111	21-227
123478-HxCDD	52.0	35-82	13C-123478-HxCDD	86.3	21-193
123678-HxCDD	56.6	38-67	13C-123678-HxCDD	82.4	25-163
123789-HxCDD	58.4	32-81	13C-1234678-HpCDD	85.7	26-166
1234678-HpCDD	52.9	35-70	13C-OCDD	77.4	13-198
OCDD	110	78-144	13C-2378-TCDF	130	22-152
2,3,7,8-TCDF	10.9	7.5-15.8	13C-12378-PeCDF	108	21-192
12378-PeCDF	57.0	40-67	13C-23478-PeCDF	101	13-328
23478-PeCDF	56.3	34-80	13C-123478-HxCDF	96.1	19-202
123478-HxCDF	49.8	36-67	13C-123678-HxCDF	93.3	21-159
123678-HxCDF	50.0	42-65	13C-234678-HxCDF	88.6	22-176
234678-HxCDF	49.9	35-78	13C-123789-HxCDF	83.6	17-205
123789-HxCDF	51.2	39-65	13C-1234678-HpCDF	83.2	21-158
1234678-HpCDF	47.0	41-61	13C-1234789-HpCDF	78.4	20-186
1234789-HpCDF	47.1	39-69			
OCDF	94.1	63-170			
			CRS		
			37Cl4-2378-TCDD	96.7	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Brine A8H2051-01		
Project ID: A8H0251	**Ceres Sample ID:** 12248-001	**Date Received:** 8/7/2018
	QC Batch #: 1838	**Date Extracted:** 8/16/2018
Date Collected: 8/1/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/17/2018
Time Collected: 11:00	**Sample Size:** 0.999 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.55	0.887	5.01	
12378-PeCDD	DL= 5.79	2.56	25.0	
123478-HxCDD	DL= 8.43	3.08	25.0	
123678-HxCDD	DL= 8.62	5.29	25.0	
123789-HxCDD	DL= 8.35	13.1	25.0	
1234678-HpCDD	DL= 6.53	5.15	25.0	
OCDD	DL= 18.0	8.50	50.1	
2,3,7,8-TCDF	DL= 3.04	0.733	5.01	
12378-PeCDF	DL= 5.06	2.96	25.0	
23478-PeCDF	DL= 4.16	5.40	25.0	
123478-HxCDF	DL= 4.13	3.93	25.0	
123678-HxCDF	DL= 4.66	2.94	25.0	
234678-HxCDF	DL= 4.67	4.32	25.0	
123789-HxCDF	DL= 6.05	4.70	25.0	
1234678-HpCDF	DL= 10.6	4.24	25.0	
1234789-HpCDF	DL= 12.0	5.74	25.0	
OCDF	DL= 20.9	11.7	50.1	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.55	
Total PeCDD	DL= 5.79	
Total HxCDD	DL= 8.62	
Total HpCDD	DL= 6.53	
Total TCDF	DL= 3.04	
Total PeCDF	DL= 5.06	
Total HxCDF	DL= 6.05	
Total HpCDF	DL= 12.0	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	69.3	25-164	
13C-12378-PeCDD	58.3	25-181	
13C-123478-HxCDD	47.8	32-141	
13C-123678-HxCDD	47.8	28-130	
13C-1234678-HpCDD	46.2	23-140	
13C-OCDD	35.3	17-157	
13C-2378-TCDF	85.7	24-169	
13C-12378-PeCDF	53.2	24-185	
13C-23478-PeCDF	57.9	21-178	
13C-123478-HxCDF	54.2	26-152	
13C-123678-HxCDF	53.3	26-123	
13C-234678-HxCDF	51.2	28-136	
13C-123789-HxCDF	46.4	29-147	
13C-1234678-HpCDF	41.8	28-143	
13C-1234789-HpCDF	43.6	26-138	

CRS

37Cl4-2378-TCDD	112	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Feed Water A8H0251-02		
Project ID: A8H0251	**Ceres Sample ID:** 12248-002	**Date Received:** 8/7/2018
	QC Batch #: 1838	**Date Extracted:** 8/16/2018
Date Collected: 8/1/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/17/2018
Time Collected: 11:10	**Sample Size:** 1.006 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.12	0.887	4.97	
12378-PeCDD	DL= 5.92	2.56	24.9	
123478-HxCDD	DL= 6.92	3.08	24.9	
123678-HxCDD	DL= 7.68	5.29	24.9	
123789-HxCDD	DL= 7.14	13.1	24.9	
1234678-HpCDD	DL= 9.31	5.15	24.9	
OCDD	DL= 10.6	8.50	49.7	
2,3,7,8-TCDF	DL= 2.81	0.733	4.97	
12378-PeCDF	DL= 5.95	2.96	24.9	
23478-PeCDF	DL= 5.15	5.40	24.9	
123478-HxCDF	DL= 5.13	3.93	24.9	
123678-HxCDF	DL= 5.40	2.94	24.9	
234678-HxCDF	DL= 4.99	4.32	24.9	
123789-HxCDF	DL= 7.05	4.70	24.9	
1234678-HpCDF	DL= 6.63	4.24	24.9	
1234789-HpCDF	DL= 7.83	5.74	24.9	
OCDF	DL= 12.3	11.7	49.7	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.12	
Total PeCDD	DL= 5.92	
Total HxCDD	DL= 7.68	
Total HpCDD	DL= 9.31	
Total TCDF	DL= 2.81	
Total PeCDF	DL= 5.95	
Total HxCDF	DL= 7.05	
Total HpCDF	DL= 7.83	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	65.7	25-164	
13C-12378-PeCDD	52.9	25-181	
13C-123478-HxCDD	47.3	32-141	
13C-123678-HxCDD	46.0	28-130	
13C-1234678-HpCDD	44.9	23-140	
13C-OCDD	35.3	17-157	
13C-2378-TCDF	77.3	24-169	
13C-12378-PeCDF	51.0	24-185	
13C-23478-PeCDF	53.4	21-178	
13C-123478-HxCDF	51.3	26-152	
13C-123678-HxCDF	51.4	26-123	
13C-234678-HxCDF	49.5	28-136	
13C-123789-HxCDF	44.5	29-147	
13C-1234678-HpCDF	40.5	28-143	
13C-1234789-HpCDF	42.1	26-138	

CRS

37Cl4-2378-TCDD	113	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H0251

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc			Sample Date
A8H0251-01	**R/O Brine**	**Client Matrix**	Water	**08/01/2018 11:00**
Lab Matrix:	Water			
	Analysis: EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			
A8H0251-02	**R/O Feed Water**	**Client Matrix**	Water	**08/01/2018 11:10**
Lab Matrix:	Water			
	Analysis: EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			

Released By	Date	Received By	Date
[signature]	8/6/18	[signature]	8/7/18 10:45

Sample Receipt Check List Logged by: J (initials)

Ceres ID: 12248	Date/Time: 8/7/18 10:45
Client Project ID: A8#0251	Received Temp: 2.3 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?	(Y) / N
Chain of Custody Received by signed?	(Y) / N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	(NA)
Unlabeled / Illegible Samples	Y / (N)
Proper Containers:	(Y) / N
Preservation Acceptable (Chemical or Temperature)?	(Y) / N
Drinking Water, Sodium Thiosulfate present?	Y / (N) / NA
Residual Cl?	Y / (N)
Aqueous sample pH: 7.7	
List COC discrepancies: J 8/7/18	
List Damaged Samples: J 8/7/18	

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: August 30, 2018

Work Order Number: A8H0251

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8H0251-01 R/O Brine	08/01/18 (11:00)	Water	900.0 901.1	Gross Beta K-40	9.75 243	± ±	1.89 770	3.10 157
A8H0251-02 R/O Feed Water	08/01/18 (11:10)	Water	900.0 901.1	Gross Beta K-40	5.12 ND	± ±	1.65 163	3.03 399

Analyses Date: August 23-27, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	328.76 pCi	311.12 pCi	94.63	5.37	A
Gamma (Cs-137)	786.26 pCi	753.92 pCi	95.88	4.12	A

Flag:

A = result accepted, Bias $\leq$ 20%
N = result not acceptable, Bias > 20%

Patricia Davi

Patricia Davi
QA/QC Manager
Davi Laboratories

2508-16,17

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H0251

SENDING LABORATORY:	RECEIVING LABORATORY:
BSK Associates Laboratory Fresno	Davi Laboratories
1414 Stanislaus St	730 Alfred Nobel Drive
Fresno, CA 93706	Hercules, CA 94547-1805
Phone: 559-497-2888	Phone :(510) 724-9450
Fax: 559-485-6935	Fax: -
Project Manager: Michelle Kawaguchi	Turnaround (Days): Standard
E-mail: mkawaguchi@bskassociates.com	QC Deliverables: I II III IV

Sample ID	Samp Desc		Sample Date
16 A8H0251-01	R/O Brine	Client Matrix Water	08/01/2018 11:00
Lab Matrix:	Water		
	Analysis:		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	
17 A8H0251-02	R/O Feed Water	Client Matrix Water	08/01/2018 11:10
Lab Matrix:	Water		
	Analysis:		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	

Released By	Date	Received By	Date
[signature]	8-6-18	[signature]	8/8/18 (1420)
Released By	Date	Received By	Date

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8H0887
8/31/2018
Invoice: A825547

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8H0887 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 8/8/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Michelle Kawaguchi

Michelle Kawaguchi, Project Manager

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-5022 City of Pismo Beach	**Project PO#:**	-
Received:	8/08/2018 - 10:30		
Report Due:	8/28/2018		

Sample Receipt Conditions

Cooler: Cooler #2
Temperature on Receipt ºC: 1.9

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Cooler: Default Cooler
Temperature on Receipt ºC: 2.0

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
B2.1	Analyte detected in associated method blank below the reporting limit. No material impact on reported result as sample is ND for this parameter.
B2.2	Analyte detected in associated method blank below the reporting limit. Sample result may be attributable to ambient laboratory background.
BS	Blank spike recoveries did not meet acceptance limits.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
J	Estimated value
MS1.0	Matrix spike recoveries exceed control limits.
MS1.3	Matrix spike recovery data unavailable or unreliable due to significant dilution required for matrix interferences.
SR1.0	Surrogate recovery exceeds upper control limit. No material impact as associated analytes are Non-Detect.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

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Certificate of Analysis

Sample ID: A8H0887-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/07/18 - 10:15
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**9.1**		0.50	ug/L	5	A811759	08/14/18	08/17/18	
Copper	EPA 200.8 DRC	**11**		1.1	ug/L	1	A811759	08/14/18	08/16/18	
Nickel	EPA 200.8 DRC	**14**		1.0	ug/L	1	A811759	08/14/18	08/16/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A811411	08/08/18	08/12/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A811411	08/08/18	08/12/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A811411	08/08/18	08/12/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Surrogate: TCMX	EPA 608	72 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	**1.5**		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	

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Certificate of Analysis

Sample ID: A8H0887-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/07/18 - 10:15
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811435	08/08/18	08/08/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811435	08/08/18	08/08/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811435	08/08/18	08/08/18	
Acetone	EPA 624	**3.1**	1.4	20	ug/L	1	A811435	08/08/18	08/08/18	J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Bromodichloromethane	EPA 624	**2.3**	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A811435	08/08/18	08/08/18	B2.1
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811435	08/08/18	08/08/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chloroform	EPA 624	**7.1**	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chloromethane	EPA 624	**0.42**	0.18	0.50	ug/L	1	A811435	08/08/18	08/08/18	J
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Dibromochloromethane	EPA 624	**0.41**	0.085	0.50	ug/L	1	A811435	08/08/18	08/08/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811435	08/08/18	08/08/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Ethylbenzene	EPA 624	**0.22**	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	J
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811435	08/08/18	08/08/18	
m,p-Xylenes	EPA 624	**0.86**	0.22	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811435	08/08/18	08/08/18	
o-Xylene	EPA 624	**0.60**	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811435	08/08/18	08/08/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Toluene	EPA 624	**0.64**	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	107 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	99 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	95 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.70	10	ug/L	5	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0887-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/07/18 - 10:15
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2,4-Dimethylphenol	EPA 625	ND	0.76	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2,4-Dinitrophenol	EPA 625	ND	1.4	5.0	ug/L	5	A811413	08/08/18	08/14/18	
2,4-Dinitrotoluene	EPA 625	ND	0.50	5.0	ug/L	5	A811413	08/08/18	08/14/18	
2,6-Dinitrotoluene	EPA 625	ND	1.8	5.0	ug/L	5	A811413	08/08/18	08/14/18	
2-Chloronaphthalene	EPA 625	ND	0.50	10	ug/L	5	A811413	08/08/18	08/14/18	
2-Chlorophenol	EPA 625	ND	0.56	2.5	ug/L	5	A811413	08/08/18	08/14/18	
2-Nitrophenol	EPA 625	ND	1.1	10	ug/L	5	A811413	08/08/18	08/14/18	
3,3-Dichlorobenzidine	EPA 625	ND	2.7	10	ug/L	5	A811413	08/08/18	08/14/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.0	ug/L	5	A811413	08/08/18	08/14/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.0	ug/L	5	A811413	08/08/18	08/14/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	1.2	5.0	ug/L	5	A811413	08/08/18	08/14/18	
4-Nitrophenol	EPA 625	ND	1.3	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Acenaphthene	EPA 625	ND	0.020	0.50	ug/L	5	A811413	08/08/18	08/14/18	
Acenaphthylene	EPA 625	ND	0.011	0.20	ug/L	5	A811413	08/08/18	08/14/18	
Anthracene	EPA 625	ND	0.0098	2.0	ug/L	5	A811413	08/08/18	08/14/18	
Benzidine	EPA 625	ND	7.0	25	ug/L	5	A811413	08/08/18	08/14/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.011	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(a)pyrene	EPA 625	ND	0.016	2.0	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(b)fluoranthene	EPA 625	ND	0.010	10	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.019	0.10	ug/L	5	A811413	08/08/18	08/14/18	
Benzo(k)fluoranthene	EPA 625	ND	0.014	2.0	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.5	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Butyl benzyl phthalate	EPA 625	ND	0.50	10	ug/L	5	A811413	08/08/18	08/14/18	
Chrysene	EPA 625	ND	0.0057	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.016	0.10	ug/L	5	A811413	08/08/18	08/14/18	
Diethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Dimethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Di-n-butyl phthalate	EPA 625	ND	0.68	10	ug/L	5	A811413	08/08/18	08/14/18	
Di-n-octyl phthalate	EPA 625	ND	0.53	10	ug/L	5	A811413	08/08/18	08/14/18	
Fluoranthene	EPA 625	ND	0.0061	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Fluorene	EPA 625	ND	0.022	0.10	ug/L	5	A811413	08/08/18	08/14/18	
Hexachlorobenzene	EPA 625	ND	0.76	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Hexachlorobutadiene	EPA 625	ND	0.67	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.013	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Isophorone	EPA 625	ND	0.57	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Naphthalene	EPA 625	**0.14**	0.014	0.20	ug/L	5	A811413	08/08/18	08/14/18	J
Nitrobenzene	EPA 625	ND	0.53	2.5	ug/L	5	A811413	08/08/18	08/14/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.4	5.0	ug/L	5	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0887-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/07/18 - 10:15
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.0	ug/L	5	A811413	08/08/18	08/14/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.2	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Pentachlorophenol	EPA 625	ND	1.0	5.0	ug/L	5	A811413	08/08/18	08/14/18	
Phenanthrene	EPA 625	ND	0.012	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Phenol	EPA 625	ND	0.50	2.5	ug/L	5	A811413	08/08/18	08/14/18	
Pyrene	EPA 625	ND	0.0072	0.050	ug/L	5	A811413	08/08/18	08/14/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	215 %		*Acceptable range: 53-200 %*			*Qualifiers - SR1.0*			
Surrogate: 2-Fluorobiphenyl	EPA 625	92 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	65 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	106 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	91 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	98 %		*Acceptable range: 39-135 %*						

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Certificate of Analysis

Sample ID: A8H0887-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/07/18 - 09:45
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**2.1**		0.10	ug/L	1	A811759	08/14/18	08/17/18	
Copper	EPA 200.8 DRC	**3.4**		1.1	ug/L	1	A811759	08/14/18	08/16/18	
Nickel	EPA 200.8 DRC	**4.4**		1.0	ug/L	1	A811759	08/14/18	08/16/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A811411	08/08/18	08/12/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A811411	08/08/18	08/12/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A811411	08/08/18	08/12/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A811411	08/08/18	08/12/18	
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A811411	08/08/18	08/12/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A811411	08/08/18	08/12/18	
Lindane	EPA 608	ND	0.0025	0.020	ug/L	1	A811411	08/08/18	08/12/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A811411	08/08/18	08/12/18	
Surrogate: TCMX	EPA 608	75 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	

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Certificate of Analysis

Sample ID: A8H0887-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/07/18 - 09:45
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811435	08/08/18	08/08/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811435	08/08/18	08/08/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811435	08/08/18	08/08/18	
Acetone	EPA 624	ND	1.4	20	ug/L	1	A811435	08/08/18	08/08/18	
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Bromodichloromethane	EPA 624	**0.66**	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Bromomethane	EPA 624	**0.23**	0.19	1.0	ug/L	1	A811435	08/08/18	08/08/18	J, B2.2
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811435	08/08/18	08/08/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chloroform	EPA 624	**1.9**	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Chloromethane	EPA 624	**0.75**	0.18	0.50	ug/L	1	A811435	08/08/18	08/08/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811435	08/08/18	08/08/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Dibromochloromethane	EPA 624	**0.13**	0.085	0.50	ug/L	1	A811435	08/08/18	08/08/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811435	08/08/18	08/08/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Ethylbenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811435	08/08/18	08/08/18	
m,p-Xylenes	EPA 624	ND	0.22	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811435	08/08/18	08/08/18	
o-Xylene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811435	08/08/18	08/08/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Toluene	EPA 624	**0.43**	0.14	0.50	ug/L	1	A811435	08/08/18	08/08/18	J
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811435	08/08/18	08/08/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	106 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	104 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	94 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0887-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/07/18 - 09:45
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A811413	08/08/18	08/14/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A811413	08/08/18	08/14/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A811413	08/08/18	08/14/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A811413	08/08/18	08/14/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A811413	08/08/18	08/14/18	
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A811413	08/08/18	08/14/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A811413	08/08/18	08/14/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A811413	08/08/18	08/14/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A811413	08/08/18	08/14/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A811413	08/08/18	08/14/18	
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A811413	08/08/18	08/14/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A811413	08/08/18	08/14/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A811413	08/08/18	08/14/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A811413	08/08/18	08/14/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A811413	08/08/18	08/14/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A811413	08/08/18	08/14/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A811413	08/08/18	08/14/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Naphthalene	EPA 625	**0.038**	0.0027	0.20	ug/L	1	A811413	08/08/18	08/14/18	J
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A811413	08/08/18	08/14/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A811413	08/08/18	08/14/18	

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Certificate of Analysis

Sample ID: A8H0887-02
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/07/18 - 09:45
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A811413	08/08/18	08/14/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A811413	08/08/18	08/14/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A811413	08/08/18	08/14/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	224 %		*Acceptable range: 53-200 %*			*Qualifiers - SR1.0*			
Surrogate: 2-Fluorobiphenyl	EPA 625	83 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	79 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	89 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	90 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	92 %		*Acceptable range: 39-135 %*						

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BSK Associates Laboratory Fresno
Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A811759											Prepared: 8/14/2018	
Prep Method: EPA 200.2 DRC											Analyst: PSK	
Blank (A811759-BLK1)												
Copper	ND		1.1	ug/L							08/16/18	
Nickel	ND		1.0	ug/L							08/16/18	
Blank (A811759-BLK2)												
Arsenic	ND		0.10	ug/L							08/17/18	
Blank Spike (A811759-BS1)												
Copper	50		1.1	ug/L	50		100	85-115			08/16/18	
Nickel	49		1.0	ug/L	50		99	85-115			08/16/18	
Blank Spike (A811759-BS2)												
Arsenic	46		0.10	ug/L	50		92	85-115			08/17/18	
Blank Spike Dup (A811759-BSD1)												
Copper	49		1.1	ug/L	50		98	85-115	2	20	08/16/18	
Nickel	49		1.0	ug/L	50		98	85-115	1	20	08/16/18	
Blank Spike Dup (A811759-BSD2)												
Arsenic	48		0.10	ug/L	50		96	85-115	4	20	08/17/18	
Matrix Spike (A811759-MS1), Source: A8H0090-01												
Copper	240		5.5	ug/L	250	11	90	70-130			08/16/18	
Nickel	240		5.0	ug/L	250	6.6	93	70-130			08/16/18	
Matrix Spike (A811759-MS2), Source: A8H0887-02												
Copper	42		1.1	ug/L	50	3.4	77	70-130			08/16/18	
Nickel	44		1.0	ug/L	50	4.4	79	70-130			08/16/18	
Matrix Spike (A811759-MS3), Source: A8H0090-01												
Arsenic	250		0.50	ug/L	250	3.7	97	70-130			08/17/18	
Matrix Spike Dup (A811759-MSD1), Source: A8H0090-01												
Copper	240		5.5	ug/L	250	11	91	70-130	1	20	08/16/18	
Nickel	240		5.0	ug/L	250	6.6	93	70-130	0	20	08/16/18	
Matrix Spike Dup (A811759-MSD2), Source: A8H0887-02												
Copper	42		1.1	ug/L	50	3.4	76	70-130	1	20	08/16/18	
Nickel	44		1.0	ug/L	50	4.4	79	70-130	0	20	08/16/18	
Matrix Spike Dup (A811759-MSD3), Source: A8H0090-01												
Arsenic	260		0.50	ug/L	250	3.7	101	70-130	4	20	08/17/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A811411											Prepared: 8/8/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank (A811411-BLK1)												
4,4'-DDD	ND	0.00072	0.0050	ug/L							08/11/18	
4,4'-DDE	ND	0.00061	0.0050	ug/L							08/11/18	
4,4'-DDT	ND	0.00070	0.0050	ug/L							08/11/18	
Aldrin	ND	0.00079	0.0050	ug/L							08/11/18	
alpha-BHC	ND	0.0025	0.0050	ug/L							08/11/18	
Aroclor-1016	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1221	ND	0.063	0.10	ug/L							08/11/18	
Aroclor-1232	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1242	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1248	ND	0.020	0.10	ug/L							08/11/18	
Aroclor-1254	ND	0.050	0.10	ug/L							08/11/18	
Aroclor-1260	ND	0.015	0.10	ug/L							08/11/18	
beta-BHC	ND	0.00054	0.0050	ug/L							08/11/18	
Chlordane	ND	0.026	0.10	ug/L							08/11/18	
delta-BHC	ND	0.00060	0.0050	ug/L							08/11/18	
Dieldrin	ND	0.00097	0.0050	ug/L							08/11/18	
Endosulfan I	ND	0.00089	0.0050	ug/L							08/11/18	
Endosulfan II	ND	0.0018	0.0050	ug/L							08/11/18	
Endosulfan Sulfate	ND	0.00074	0.0050	ug/L							08/11/18	
Endrin	ND	0.00081	0.0050	ug/L							08/11/18	
Endrin Aldehyde	ND	0.00067	0.0050	ug/L							08/11/18	
Heptachlor	ND	0.00069	0.0050	ug/L							08/11/18	
Heptachlor Epoxide	ND	0.00069	0.0050	ug/L							08/11/18	
Lindane	ND	0.0025	0.0050	ug/L							08/11/18	
Toxaphene	ND	0.035	0.10	ug/L							08/11/18	
Surrogate: TCMX	*0.22*				*0.30*		*72*	*26-144*			08/11/18	
Blank Spike (A811411-BS1)												
4,4'-DDD	0.037	0.00072	0.0050	ug/L	0.040		93	63-146			08/11/18	
4,4'-DDE	0.036	0.00061	0.0050	ug/L	0.040		91	49-150			08/11/18	
4,4'-DDT	0.035	0.00070	0.0050	ug/L	0.040		88	66-146			08/11/18	
Aldrin	0.035	0.00079	0.0050	ug/L	0.040		87	24-144			08/11/18	
alpha-BHC	0.034	0.0025	0.0050	ug/L	0.040		85	32-176			08/11/18	
beta-BHC	0.037	0.00054	0.0050	ug/L	0.040		93	59-152			08/11/18	
delta-BHC	0.033	0.00060	0.0050	ug/L	0.040		82	46-156			08/11/18	
Dieldrin	0.035	0.00097	0.0050	ug/L	0.040		87	62-146			08/11/18	
Endosulfan I	0.037	0.00089	0.0050	ug/L	0.040		94	53-151			08/11/18	
Endosulfan II	0.038	0.0018	0.0050	ug/L	0.040		94	63-144			08/11/18	
Endosulfan Sulfate	0.036	0.00074	0.0050	ug/L	0.040		91	65-145			08/11/18	
Endrin	0.035	0.00081	0.0050	ug/L	0.040		88	55-153			08/11/18	
Endrin Aldehyde	0.032	0.00067	0.0050	ug/L	0.040		79	68-128			08/11/18	
Heptachlor	0.042	0.00069	0.0050	ug/L	0.040		105	34-147			08/11/18	
Heptachlor Epoxide	0.037	0.00069	0.0050	ug/L	0.040		92	57-150			08/11/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A811411											Prepared: 8/8/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank Spike (A811411-BS1)												
Lindane	0.034	0.0025	0.0050	ug/L	0.040		86	58-148			08/11/18	
Surrogate: TCMX	*0.22*				*0.30*		*73*	*26-144*			08/11/18	
Blank Spike Dup (A811411-BSD1)												
4,4'-DDD	0.039	0.00072	0.0050	ug/L	0.040		98	63-146	5	20	08/11/18	
4,4'-DDE	0.038	0.00061	0.0050	ug/L	0.040		94	49-150	4	20	08/11/18	
4,4'-DDT	0.036	0.00070	0.0050	ug/L	0.040		91	66-146	4	20	08/11/18	
Aldrin	0.036	0.00079	0.0050	ug/L	0.040		90	24-144	4	20	08/11/18	
alpha-BHC	0.034	0.0025	0.0050	ug/L	0.040		85	32-176	1	20	08/11/18	
beta-BHC	0.037	0.00054	0.0050	ug/L	0.040		93	59-152	1	20	08/11/18	
delta-BHC	0.034	0.00060	0.0050	ug/L	0.040		85	46-156	3	20	08/11/18	
Dieldrin	0.037	0.00097	0.0050	ug/L	0.040		92	62-146	6	20	08/11/18	
Endosulfan I	0.038	0.00089	0.0050	ug/L	0.040		96	53-151	2	20	08/11/18	
Endosulfan II	0.041	0.0018	0.0050	ug/L	0.040		102	63-144	8	20	08/11/18	
Endosulfan Sulfate	0.037	0.00074	0.0050	ug/L	0.040		92	65-145	2	20	08/11/18	
Endrin	0.039	0.00081	0.0050	ug/L	0.040		96	55-153	9	20	08/11/18	
Endrin Aldehyde	0.032	0.00067	0.0050	ug/L	0.040		80	68-128	1	20	08/11/18	
Heptachlor	0.042	0.00069	0.0050	ug/L	0.040		104	34-147	1	20	08/11/18	
Heptachlor Epoxide	0.037	0.00069	0.0050	ug/L	0.040		94	57-150	2	20	08/11/18	
Lindane	0.035	0.0025	0.0050	ug/L	0.040		89	58-148	4	20	08/11/18	
Surrogate: TCMX	*0.22*				*0.30*		*74*	*26-144*			08/11/18	
Matrix Spike (A811411-MS1), Source: A8H0251-01												
4,4'-DDD	0.023	0.00072	0.0050	ug/L	0.039	ND	60	63-146			08/12/18	MS1.0 ***Low***
4,4'-DDE	0.020	0.00061	0.0050	ug/L	0.039	ND	51	49-150			08/12/18	
4,4'-DDT	0.024	0.00070	0.0050	ug/L	0.039	ND	62	66-146			08/12/18	MS1.0 ***Low***
Aldrin	0.074	0.00079	0.0050	ug/L	0.039	ND	191	24-144			08/12/18	MS1.0 ***High***
alpha-BHC	0.030	0.0025	0.0050	ug/L	0.039	ND	77	32-176			08/12/18	
beta-BHC	0.034	0.00054	0.0050	ug/L	0.039	ND	89	59-152			08/12/18	
delta-BHC	0.036	0.00060	0.0050	ug/L	0.039	ND	92	46-156			08/12/18	
Dieldrin	0.023	0.00097	0.0050	ug/L	0.039	ND	60	62-146			08/12/18	MS1.0 ***Low***
Endosulfan I	ND	0.00089	0.0050	ug/L	0.039	ND	0	53-151			08/12/18	MS1.0 ***Low***
Endosulfan II	0.025	0.0018	0.0050	ug/L	0.039	ND	65	63-144			08/12/18	
Endosulfan Sulfate	ND	0.00074	0.0050	ug/L	0.039	ND	0	65-145			08/12/18	MS1.0 ***Low***
Endrin	0.032	0.00081	0.0050	ug/L	0.039	ND	81	55-153			08/12/18	
Endrin Aldehyde	ND	0.00067	0.0050	ug/L	0.039	ND	0	68-128			08/12/18	MS1.0 ***Low***
Heptachlor	0.036	0.00069	0.0050	ug/L	0.039	ND	93	34-147			08/12/18	
Heptachlor Epoxide	ND	0.00069	0.0050	ug/L	0.039	ND	0	57-150			08/12/18	MS1.0 ***Low***
Lindane	0.045	0.0025	0.0050	ug/L	0.039	ND	117	58-148			08/12/18	
Surrogate: TCMX	*0.24*				*0.29*		*81*	*26-144*			08/12/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811435											Prepared: 8/8/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811435-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							08/08/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							08/08/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							08/08/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							08/08/18	
1,1-Dichloroethene	ND	0.12	0.50	ug/L							08/08/18	
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							08/08/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							08/08/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							08/08/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							08/08/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							08/08/18	
2-Butanone	ND	1.2	20	ug/L							08/08/18	
2-Hexanone	ND	1.2	20	ug/L							08/08/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							08/08/18	
Acetone	ND	1.4	5.0	ug/L							08/08/18	
Benzene	ND	0.15	0.50	ug/L							08/08/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							08/08/18	
Bromoform	ND	0.14	0.50	ug/L							08/08/18	
Bromomethane	0.30	0.19	1.0	ug/L							08/08/18	B2.0, J
Carbon disulfide	ND	1.6	5.0	ug/L							08/08/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							08/08/18	
Chlorobenzene	ND	0.13	0.50	ug/L							08/08/18	
Chloroethane	ND	0.13	0.50	ug/L							08/08/18	
Chloroform	ND	0.10	0.50	ug/L							08/08/18	
Chloromethane	ND	0.18	0.50	ug/L							08/08/18	
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							08/08/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							08/08/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							08/08/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							08/08/18	
Dichloromethane	ND	0.11	0.50	ug/L							08/08/18	
Ethylbenzene	ND	0.13	0.50	ug/L							08/08/18	
Hexachloroethane	ND	0.15	1.0	ug/L							08/08/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							08/08/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							08/08/18	
o-Xylene	ND	0.12	0.50	ug/L							08/08/18	
Styrene	ND	0.16	0.50	ug/L							08/08/18	
Tetrachloroethene (PCE)	ND	0.11	0.50	ug/L							08/08/18	
Toluene	ND	0.14	0.50	ug/L							08/08/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							08/08/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							08/08/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							08/08/18	
Trichlorofluoromethane	ND	0.12	0.50	ug/L							08/08/18	
Vinyl Chloride	ND	0.15	0.50	ug/L							08/08/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811435											Prepared: 8/8/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811435-BLK1)												
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			08/08/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*100*	*70-130*			08/08/18	
Surrogate: Toluene-d8	*49*				*50*		*97*	*70-130*			08/08/18	
Blank Spike (A811435-BS1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		115	52-162			08/08/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		100	46-157			08/08/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		101	52-150			08/08/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10		112	59-155			08/08/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		115	10-234			08/08/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190			08/08/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10		109	49-155			08/08/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10		111	10-210			08/08/18	
1,3-Dichlorobenzene	11	0.11	0.50	ug/L	10		107	59-156			08/08/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		103	18-190			08/08/18	
2-Butanone	9.6	1.2	20	ug/L	10		96	46-156			08/08/18	J
2-Hexanone	10	1.2	20	ug/L	10		100	56-135			08/08/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10		115	67-136			08/08/18	J
Acetone	7.5	1.4	5.0	ug/L	10		75	19-194			08/08/18	
Benzene	11	0.15	0.50	ug/L	10		112	37-151			08/08/18	
Bromodichloromethane	11	0.10	0.50	ug/L	10		109	35-155			08/08/18	
Bromoform	10	0.14	0.50	ug/L	10		100	45-169			08/08/18	
Bromomethane	10	0.19	1.0	ug/L	10		105	10-242			08/08/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		112	78-140			08/08/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		111	70-140			08/08/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		103	37-160			08/08/18	
Chloroethane	11	0.13	0.50	ug/L	10		110	14-230			08/08/18	
Chloroform	12	0.10	0.50	ug/L	10		115	51-138			08/08/18	
Chloromethane	10	0.18	0.50	ug/L	10		101	10-273			08/08/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10		112	81-130			08/08/18	
cis-1,3-Dichloropropene	11	0.11	0.50	ug/L	10		109	10-227			08/08/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		101	53-149			08/08/18	
Dichlorodifluoromethane	8.6	0.11	1.0	ug/L	10		86	52-171			08/08/18	
Dichloromethane	11	0.11	0.50	ug/L	10		109	10-221			08/08/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		104	37-162			08/08/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		122	78-145			08/08/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		104	83-108			08/08/18	
Methyl-t-butyl ether	22	0.22	0.50	ug/L	20		110	79-131			08/08/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115			08/08/18	
Styrene	10	0.16	0.50	ug/L	10		101	78-117			08/08/18	
Tetrachloroethene (PCE)	9.7	0.11	0.50	ug/L	10		97	64-148			08/08/18	
Toluene	10	0.14	0.50	ug/L	10		103	47-150			08/08/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10		113	54-156			08/08/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811435											Prepared: 8/8/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A811435-BS1)												
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		100	17-183			08/08/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		113	71-157			08/08/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10		116	17-181			08/08/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10		107	10-251			08/08/18	
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			08/08/18	
Surrogate: Bromofluorobenzene	*49*				*50*		*97*	*70-130*			08/08/18	
Surrogate: Toluene-d8	*48*				*50*		*96*	*70-130*			08/08/18	
Blank Spike Dup (A811435-BSD1)												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10		115	52-162	0	30	08/08/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		100	46-157	0	30	08/08/18	
1,1,2-Trichloroethane	9.9	0.14	0.50	ug/L	10		99	52-150	2	30	08/08/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10		111	59-155	1	30	08/08/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		115	10-234	0	30	08/08/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		101	18-190	1	30	08/08/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10		108	49-155	1	30	08/08/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10		110	10-210	1	30	08/08/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		100	59-156	6	30	08/08/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		103	18-190	1	30	08/08/18	
2-Butanone	9.7	1.2	20	ug/L	10		97	46-156	1	30	08/08/18	J
2-Hexanone	10	1.2	20	ug/L	10		101	56-135	0	30	08/08/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10		110	67-136	4	30	08/08/18	J
Acetone	7.6	1.4	5.0	ug/L	10		76	19-194	2	30	08/08/18	
Benzene	11	0.15	0.50	ug/L	10		110	37-151	2	30	08/08/18	
Bromodichloromethane	11	0.10	0.50	ug/L	10		109	35-155	0	30	08/08/18	
Bromoform	10	0.14	0.50	ug/L	10		101	45-169	1	30	08/08/18	
Bromomethane	11	0.19	1.0	ug/L	10		106	10-242	1	30	08/08/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		112	78-140	0	30	08/08/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		109	70-140	2	30	08/08/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		103	37-160	0	30	08/08/18	
Chloroethane	11	0.13	0.50	ug/L	10		110	14-230	0	30	08/08/18	
Chloroform	11	0.10	0.50	ug/L	10		111	51-138	4	30	08/08/18	
Chloromethane	10	0.18	0.50	ug/L	10		101	10-273	1	30	08/08/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10		111	81-130	1	30	08/08/18	
cis-1,3-Dichloropropene	11	0.11	0.50	ug/L	10		108	10-227	1	30	08/08/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		100	53-149	0	30	08/08/18	
Dichlorodifluoromethane	8.5	0.11	1.0	ug/L	10		85	52-171	1	30	08/08/18	
Dichloromethane	11	0.11	0.50	ug/L	10		108	10-221	1	30	08/08/18	
Ethylbenzene	11	0.13	0.50	ug/L	10		105	37-162	1	30	08/08/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		123	78-145	1	30	08/08/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		104	83-108	0	30	08/08/18	
Methyl-t-butyl ether	22	0.22	0.50	ug/L	20		109	79-131	1	30	08/08/18	
o-Xylene	10	0.12	0.50	ug/L	10		103	81-115	0	30	08/08/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811435											Prepared: 8/8/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A811435-BSD1)												
Styrene	10	0.16	0.50	ug/L	10		102	78-117	1	30	08/08/18	
Tetrachloroethene (PCE)	10	0.11	0.50	ug/L	10		102	64-148	5	30	08/08/18	
Toluene	10	0.14	0.50	ug/L	10		103	47-150	0	30	08/08/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10		111	54-156	1	30	08/08/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		100	17-183	0	30	08/08/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		110	71-157	3	30	08/08/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10		116	17-181	0	30	08/08/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10		106	10-251	0	30	08/08/18	
Surrogate: 1,2-Dichloroethane-d4	*52*				*50*		*105*	*70-130*			08/08/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*103*	*70-130*			08/08/18	
Surrogate: Toluene-d8	*48*				*50*		*96*	*70-130*			08/08/18	
Matrix Spike (A811435-MS1), Source: A8H0887-02												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10	ND	112	52-162			08/08/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10	ND	102	46-157			08/08/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	102	52-150			08/08/18	
1,1-Dichloroethane	11	0.11	0.50	ug/L	10	ND	109	59-155			08/08/18	
1,1-Dichloroethene	11	0.12	0.50	ug/L	10	ND	106	10-234			08/08/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	100	18-190			08/08/18	
1,2-Dichloroethane	11	0.10	0.50	ug/L	10	ND	110	49-155			08/08/18	
1,2-Dichloropropane	11	0.12	0.50	ug/L	10	ND	112	10-210			08/08/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10	ND	101	59-156			08/08/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	101	18-190			08/08/18	
2-Butanone	9.4	1.2	20	ug/L	10	ND	94	46-156			08/08/18	J
2-Hexanone	10	1.2	20	ug/L	10	ND	103	56-135			08/08/18	J
4-Methyl-2-pentanone	12	0.97	20	ug/L	10	ND	117	67-136			08/08/18	J
Acetone	7.6	1.4	5.0	ug/L	10	ND	76	19-194			08/08/18	
Benzene	11	0.15	0.50	ug/L	10	ND	110	37-151			08/08/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10	0.66	109	35-155			08/08/18	
Bromoform	9.9	0.14	0.50	ug/L	10	ND	99	45-169			08/08/18	
Bromomethane	8.3	0.19	1.0	ug/L	10	0.23	81	10-242			08/08/18	
Carbon disulfide	9.6	1.6	5.0	ug/L	10	ND	96	78-140			08/08/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10	ND	106	70-140			08/08/18	
Chlorobenzene	10	0.13	0.50	ug/L	10	ND	102	37-160			08/08/18	
Chloroethane	9.6	0.13	0.50	ug/L	10	ND	96	14-230			08/08/18	
Chloroform	12	0.10	0.50	ug/L	10	1.9	100	51-138			08/08/18	
Chloromethane	8.9	0.18	0.50	ug/L	10	0.75	82	10-273			08/08/18	
cis-1,2-Dichloroethene	11	0.10	0.50	ug/L	10	ND	110	81-130			08/08/18	
cis-1,3-Dichloropropene	11	0.11	0.50	ug/L	10	ND	108	10-227			08/08/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10	0.13	100	53-149			08/08/18	
Dichlorodifluoromethane	5.4	0.11	1.0	ug/L	10	ND	54	52-171			08/08/18	
Dichloromethane	11	0.11	0.50	ug/L	10	ND	108	10-221			08/08/18	
Ethylbenzene	10	0.13	0.50	ug/L	10	ND	103	37-162			08/08/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811435											Prepared: 8/8/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A811435-MS1), Source: A8H0887-02												
Hexachloroethane	12	0.15	1.0	ug/L	10	ND	120	78-145			08/08/18	
m,p-Xylenes	20	0.22	0.50	ug/L	20	ND	102	83-108			08/08/18	
Methyl-t-butyl ether	21	0.22	0.50	ug/L	20	ND	107	79-131			08/08/18	
o-Xylene	10	0.12	0.50	ug/L	10	ND	101	81-115			08/08/18	
Styrene	9.8	0.16	0.50	ug/L	10	ND	98	78-117			08/08/18	
Tetrachloroethene (PCE)	9.2	0.11	0.50	ug/L	10	ND	92	64-148			08/08/18	
Toluene	11	0.14	0.50	ug/L	10	0.43	102	47-150			08/08/18	
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10	ND	108	54-156			08/08/18	
trans-1,3-Dichloropropene	9.9	0.12	0.50	ug/L	10	ND	99	17-183			08/08/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10	ND	110	71-157			08/08/18	
Trichlorofluoromethane	10	0.12	0.50	ug/L	10	ND	101	17-181			08/08/18	
Vinyl Chloride	8.6	0.15	0.50	ug/L	10	ND	86	10-251			08/08/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*103*	*70-130*			08/08/18	
Surrogate: Bromofluorobenzene	*51*				*50*		*102*	*70-130*			08/08/18	
Surrogate: Toluene-d8	*48*				*50*		*95*	*70-130*			08/08/18	
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A811413-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	1.0	ug/L							08/13/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	1.0	ug/L							08/13/18	
2,4,6-Trichlorophenol	ND	0.14	10	ug/L							08/13/18	
2,4-Dichlorophenol	ND	0.10	1.0	ug/L							08/13/18	
2,4-Dimethylphenol	ND	0.15	1.0	ug/L							08/13/18	
2,4-Dinitrophenol	ND	0.27	5.0	ug/L							08/13/18	
2,4-Dinitrotoluene	ND	0.10	5.0	ug/L							08/13/18	
2,6-Dinitrotoluene	ND	0.36	5.0	ug/L							08/13/18	
2-Chloronaphthalene	ND	0.10	10	ug/L							08/13/18	
2-Chlorophenol	ND	0.11	2.0	ug/L							08/13/18	
2-Nitrophenol	ND	0.21	10	ug/L							08/13/18	
3,3-Dichlorobenzidine	ND	0.54	5.0	ug/L							08/13/18	
4,6-Dinitro-2-methylphenol	ND	0.11	5.0	ug/L							08/13/18	
4-Bromophenyl phenyl ether	ND	0.10	5.0	ug/L							08/13/18	
4-Chloro-3-methylphenol	ND	0.10	1.0	ug/L							08/13/18	
4-Chlorophenyl phenyl ether	ND	0.23	5.0	ug/L							08/13/18	
4-Nitrophenol	ND	0.26	5.0	ug/L							08/13/18	
Acenaphthene	ND	0.0040	0.50	ug/L							08/13/18	
Acenaphthylene	ND	0.0023	0.20	ug/L							08/13/18	
Anthracene	ND	0.0020	2.0	ug/L							08/13/18	
Benzidine	ND	1.4	5.0	ug/L							08/13/18	
Benzo(a)anthracene	ND	0.0023	5.0	ug/L							08/13/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A811413-BLK1)												
Benzo(a)pyrene	ND	0.0033	2.0	ug/L							08/13/18	
Benzo(b)fluoranthene	ND	0.0021	10	ug/L							08/13/18	
Benzo(g,h,i)perylene	ND	0.0039	0.10	ug/L							08/13/18	
Benzo(k)fluoranthene	ND	0.0028	2.0	ug/L							08/13/18	
Bis(2-chloroethoxy)methane	ND	0.10	5.0	ug/L							08/13/18	
Bis(2-chloroethyl) ether	ND	0.15	1.0	ug/L							08/13/18	
Bis(2-chloroisopropyl) ether	ND	0.13	2.0	ug/L							08/13/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	5.0	ug/L							08/13/18	
Butyl benzyl phthalate	ND	0.10	10	ug/L							08/13/18	
Chrysene	ND	0.0011	5.0	ug/L							08/13/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.10	ug/L							08/13/18	
Diethyl phthalate	ND	0.10	2.0	ug/L							08/13/18	
Dimethyl phthalate	ND	0.10	2.0	ug/L							08/13/18	
Di-n-butyl phthalate	ND	0.14	10	ug/L							08/13/18	
Di-n-octyl phthalate	ND	0.11	10	ug/L							08/13/18	
Fluoranthene	ND	0.0012	0.050	ug/L							08/13/18	
Fluorene	ND	0.0043	0.10	ug/L							08/13/18	
Hexachlorobenzene	ND	0.15	1.0	ug/L							08/13/18	
Hexachlorobutadiene	ND	0.13	1.0	ug/L							08/13/18	
Hexachlorocyclopentadiene	ND	0.14	5.0	ug/L							08/13/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.050	ug/L							08/13/18	
Isophorone	ND	0.11	1.0	ug/L							08/13/18	
Naphthalene	ND	0.0027	0.20	ug/L							08/13/18	
Nitrobenzene	ND	0.11	1.0	ug/L							08/13/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	5.0	ug/L							08/13/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	5.0	ug/L							08/13/18	
N-Nitrosodiphenylamine (as DPA)	ND	0.24	1.0	ug/L							08/13/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							08/13/18	
Phenanthrene	ND	0.0024	0.050	ug/L							08/13/18	
Phenol	ND	0.10	1.0	ug/L							08/13/18	
Pyrene	ND	0.0014	0.050	ug/L							08/13/18	
Surrogate: 2,4,6-Tribromophenol	*7.1*				*5.0*		*142*	*53-200*			08/13/18	
Surrogate: 2-Fluorobiphenyl	*4.2*				*5.0*		*85*	*40-127*			08/13/18	
Surrogate: 2-Fluorophenol	*4.4*				*5.0*		*88*	*42-123*			08/13/18	
Surrogate: Nitrobenzene-d5	*2.8*				*5.0*		*55*	*49-133*			08/13/18	
Surrogate: Phenol-d6	*4.9*				*5.0*		*97*	*52-125*			08/13/18	
Surrogate: p-Terphenyl-d14	*4.7*				*5.0*		*95*	*39-135*			08/13/18	
Blank Spike (A811413-BS1)												
1,2,4-Trichlorobenzene	3.5	0.10	1.0	ug/L	5.0		69	44-142			08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.4	0.10	1.0	ug/L	5.0		69	30-130			08/14/18	
2,4,6-Trichlorophenol	4.2	0.14	10	ug/L	5.0		83	37-144			08/14/18	J
2,4-Dichlorophenol	4.0	0.10	1.0	ug/L	5.0		80	39-135			08/14/18	
2,4-Dimethylphenol	2.9	0.15	1.0	ug/L	5.0		57	10-175			08/14/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A811413											Prepared: 8/8/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike (A811413-BS1)													
2,4-Dinitrophenol	3.7	0.27	5.0	ug/L	5.0		75	10-191			08/14/18	J	
2,4-Dinitrotoluene	5.0	0.10	5.0	ug/L	5.0		100	39-139			08/14/18		
2,6-Dinitrotoluene	4.8	0.36	5.0	ug/L	5.0		96	50-158			08/14/18	J	
2-Chloronaphthalene	4.1	0.10	10	ug/L	5.0		81	60-118			08/14/18	J	
2-Chlorophenol	3.7	0.11	2.0	ug/L	5.0		74	23-134			08/14/18		
2-Nitrophenol	4.0	0.21	10	ug/L	5.0		80	29-182			08/14/18	J	
3,3-Dichlorobenzidine	11	0.54	5.0	ug/L	20		54	10-200			08/14/18		
4,6-Dinitro-2-methylphenol	3.5	0.11	5.0	ug/L	5.0		71	10-181			08/14/18	J	
4-Bromophenyl phenyl ether	4.9	0.10	5.0	ug/L	5.0		97	53-127			08/14/18	J	
4-Chloro-3-methylphenol	3.5	0.10	1.0	ug/L	5.0		70	22-147			08/14/18		
4-Chlorophenyl phenyl ether	4.5	0.23	5.0	ug/L	5.0		89	25-158			08/14/18	J	
4-Nitrophenol	4.7	0.26	5.0	ug/L	5.0		94	10-132			08/14/18	J	
Acenaphthene	0.081	0.0040	0.50	ug/L	0.10		81	47-145			08/14/18	J	
Acenaphthylene	0.064	0.0023	0.20	ug/L	0.10		64	33-145			08/14/18	J	
Anthracene	0.093	0.0020	2.0	ug/L	0.10		93	27-133			08/14/18	J	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			08/14/18	BS	*Low*
Benzo(a)anthracene	0.089	0.0023	5.0	ug/L	0.10		89	33-143			08/14/18	J	
Benzo(a)pyrene	0.079	0.0033	2.0	ug/L	0.10		79	17-163			08/14/18	J	
Benzo(b)fluoranthene	0.12	0.0021	10	ug/L	0.10		121	24-159			08/14/18	J	
Benzo(g,h,i)perylene	0.10	0.0039	0.10	ug/L	0.10		103	10-200			08/14/18		
Benzo(k)fluoranthene	0.094	0.0028	2.0	ug/L	0.10		94	11-162			08/14/18	J	
Bis(2-chloroethoxy)methane	4.3	0.10	5.0	ug/L	5.0		85	33-184			08/14/18	J	
Bis(2-chloroethyl) ether	4.1	0.15	1.0	ug/L	5.0		82	12-158			08/14/18		
Bis(2-chloroisopropyl) ether	4.2	0.13	2.0	ug/L	5.0		85	36-166			08/14/18		
Bis(2-ethylhexyl) phthalate	3.9	0.29	5.0	ug/L	5.0		78	10-158			08/14/18	J	
Butyl benzyl phthalate	2.6	0.10	10	ug/L	5.0		52	10-152			08/14/18	J	
Chrysene	0.088	0.0011	5.0	ug/L	0.10		88	17-168			08/14/18	J	
Dibenzo(a,h)anthracene	0.13	0.0031	0.10	ug/L	0.10		125	10-200			08/14/18		
Diethyl phthalate	2.7	0.10	2.0	ug/L	5.0		55	10-114			08/14/18		
Dimethyl phthalate	1.4	0.10	2.0	ug/L	5.0		28	10-112			08/14/18	J	
Di-n-butyl phthalate	3.7	0.14	10	ug/L	5.0		74	10-118			08/14/18	J	
Di-n-octyl phthalate	4.0	0.11	10	ug/L	5.0		80	10-146			08/14/18	J	
Fluoranthene	0.098	0.0012	0.050	ug/L	0.10		98	26-137			08/14/18		
Fluorene	0.088	0.0043	0.10	ug/L	0.10		88	59-121			08/14/18	J	
Hexachlorobenzene	4.7	0.15	1.0	ug/L	5.0		94	10-152			08/14/18		
Hexachlorobutadiene	3.3	0.13	1.0	ug/L	5.0		67	24-116			08/14/18		
Hexachlorocyclopentadiene	2.2	0.14	5.0	ug/L	5.0		44	10-130			08/14/18	J	
Indeno(1,2,3-cd)pyrene	0.11	0.0027	0.050	ug/L	0.10		106	10-171			08/14/18		
Isophorone	4.2	0.11	1.0	ug/L	5.0		84	21-196			08/14/18		
Naphthalene	0.079	0.0027	0.20	ug/L	0.10		79	21-133			08/14/18	J	
Nitrobenzene	4.9	0.11	1.0	ug/L	5.0		97	35-180			08/14/18		
N-Nitrosodimethylamine (NDMA)	3.3	0.48	5.0	ug/L	5.0		65	10-130			08/14/18	J	
N-Nitrosodi-n-propylamine (NDPA)	3.2	0.10	5.0	ug/L	5.0		65	10-200			08/14/18	J	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A811413-BS1)												
N-Nitrosodiphenylamine (as DPA)	4.1	0.24	1.0	ug/L	5.0		81	10-130			08/14/18	
Pentachlorophenol	4.2	0.20	1.0	ug/L	5.0		84	14-176			08/14/18	
Phenanthrene	0.086	0.0024	0.050	ug/L	0.10		86	54-120			08/14/18	
Phenol	3.9	0.10	1.0	ug/L	5.0		78	10-112			08/14/18	
Pyrene	0.088	0.0014	0.050	ug/L	0.10		88	52-115			08/14/18	
Surrogate: 2,4,6-Tribromophenol	*8.6*				*5.0*		*173*	*53-200*			08/14/18	
Surrogate: 2-Fluorobiphenyl	*4.1*				*5.0*		*82*	*40-127*			08/14/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*79*	*42-123*			08/14/18	
Surrogate: Nitrobenzene-d5	*4.3*				*5.0*		*86*	*49-133*			08/14/18	
Surrogate: Phenol-d6	*4.3*				*5.0*		*86*	*52-125*			08/14/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*88*	*39-135*			08/14/18	
Blank Spike Dup (A811413-BSD1)												
1,2,4-Trichlorobenzene	3.4	0.10	1.0	ug/L	5.0		67	44-142	3	30	08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.7	0.10	1.0	ug/L	5.0		74	30-130	8	30	08/14/18	
2,4,6-Trichlorophenol	4.2	0.14	10	ug/L	5.0		84	37-144	1	30	08/14/18	J
2,4-Dichlorophenol	4.2	0.10	1.0	ug/L	5.0		84	39-135	5	30	08/14/18	
2,4-Dimethylphenol	1.3	0.15	1.0	ug/L	5.0		25	10-175	78	30	08/14/18	BS3.0
2,4-Dinitrophenol	4.0	0.27	5.0	ug/L	5.0		79	10-191	6	30	08/14/18	J
2,4-Dinitrotoluene	4.8	0.10	5.0	ug/L	5.0		97	39-139	3	30	08/14/18	J
2,6-Dinitrotoluene	4.7	0.36	5.0	ug/L	5.0		94	50-158	2	30	08/14/18	J
2-Chloronaphthalene	4.0	0.10	10	ug/L	5.0		80	60-118	2	30	08/14/18	J
2-Chlorophenol	3.9	0.11	2.0	ug/L	5.0		77	23-134	5	30	08/14/18	
2-Nitrophenol	4.1	0.21	10	ug/L	5.0		81	29-182	1	30	08/14/18	J
3,3-Dichlorobenzidine	13	0.54	5.0	ug/L	20		63	10-200	14	30	08/14/18	
4,6-Dinitro-2-methylphenol	3.7	0.11	5.0	ug/L	5.0		74	10-181	4	30	08/14/18	J
4-Bromophenyl phenyl ether	4.6	0.10	5.0	ug/L	5.0		92	53-127	6	30	08/14/18	J
4-Chloro-3-methylphenol	1.5	0.10	1.0	ug/L	5.0		30	22-147	80	30	08/14/18	BS3.0
4-Chlorophenyl phenyl ether	4.2	0.23	5.0	ug/L	5.0		83	25-158	7	30	08/14/18	J
4-Nitrophenol	3.6	0.26	5.0	ug/L	5.0		71	10-132	28	30	08/14/18	J
Acenaphthene	0.082	0.0040	0.50	ug/L	0.10		82	47-145	1	30	08/14/18	J
Acenaphthylene	0.067	0.0023	0.20	ug/L	0.10		67	33-145	5	30	08/14/18	J
Anthracene	0.082	0.0020	2.0	ug/L	0.10		82	27-133	13	30	08/14/18	J
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	08/14/18	BS ***Low***
Benzo(a)anthracene	0.098	0.0023	5.0	ug/L	0.10		98	33-143	10	30	08/14/18	J
Benzo(a)pyrene	0.081	0.0033	2.0	ug/L	0.10		81	17-163	2	30	08/14/18	J
Benzo(b)fluoranthene	0.12	0.0021	10	ug/L	0.10		116	24-159	4	30	08/14/18	J
Benzo(g,h,i)perylene	0.097	0.0039	0.10	ug/L	0.10		97	10-200	6	30	08/14/18	J
Benzo(k)fluoranthene	0.092	0.0028	2.0	ug/L	0.10		92	11-162	2	30	08/14/18	J
Bis(2-chloroethoxy)methane	4.4	0.10	5.0	ug/L	5.0		89	33-184	4	30	08/14/18	J
Bis(2-chloroethyl) ether	4.5	0.15	1.0	ug/L	5.0		90	12-158	10	30	08/14/18	
Bis(2-chloroisopropyl) ether	4.3	0.13	2.0	ug/L	5.0		87	36-166	2	30	08/14/18	
Bis(2-ethylhexyl) phthalate	4.3	0.29	5.0	ug/L	5.0		86	10-158	10	30	08/14/18	J
Butyl benzyl phthalate	3.0	0.10	10	ug/L	5.0		61	10-152	16	30	08/14/18	J

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A811413-BSD1)												
Chrysene	0.092	0.0011	5.0	ug/L	0.10		92	17-168	5	30	08/14/18	J
Dibenzo(a,h)anthracene	0.12	0.0031	0.10	ug/L	0.10		117	10-200	6	30	08/14/18	
Diethyl phthalate	3.2	0.10	2.0	ug/L	5.0		63	10-114	14	30	08/14/18	
Dimethyl phthalate	1.8	0.10	2.0	ug/L	5.0		36	10-112	24	30	08/14/18	J
Di-n-butyl phthalate	3.9	0.14	10	ug/L	5.0		78	10-118	6	30	08/14/18	J
Di-n-octyl phthalate	4.3	0.11	10	ug/L	5.0		85	10-146	7	30	08/14/18	J
Fluoranthene	0.096	0.0012	0.050	ug/L	0.10		96	26-137	2	30	08/14/18	
Fluorene	0.086	0.0043	0.10	ug/L	0.10		86	59-121	3	30	08/14/18	J
Hexachlorobenzene	4.3	0.15	1.0	ug/L	5.0		86	10-152	8	30	08/14/18	
Hexachlorobutadiene	3.1	0.13	1.0	ug/L	5.0		62	24-116	7	30	08/14/18	
Hexachlorocyclopentadiene	2.2	0.14	5.0	ug/L	5.0		45	10-130	1	30	08/14/18	J
Indeno(1,2,3-cd)pyrene	0.10	0.0027	0.050	ug/L	0.10		101	10-171	4	30	08/14/18	
Isophorone	4.3	0.11	1.0	ug/L	5.0		86	21-196	2	30	08/14/18	
Naphthalene	0.079	0.0027	0.20	ug/L	0.10		79	21-133	0	30	08/14/18	J
Nitrobenzene	4.9	0.11	1.0	ug/L	5.0		99	35-180	1	30	08/14/18	
N-Nitrosodimethylamine (NDMA)	3.4	0.48	5.0	ug/L	5.0		68	10-130	4	30	08/14/18	J
N-Nitrosodi-n-propylamine (NDPA)	3.5	0.10	5.0	ug/L	5.0		71	10-200	9	30	08/14/18	J
N-Nitrosodiphenylamine (as DPA)	4.1	0.24	1.0	ug/L	5.0		83	10-130	2	30	08/14/18	
Pentachlorophenol	4.4	0.20	1.0	ug/L	5.0		89	14-176	6	30	08/14/18	
Phenanthrene	0.089	0.0024	0.050	ug/L	0.10		89	54-120	3	30	08/14/18	
Phenol	4.0	0.10	1.0	ug/L	5.0		79	10-112	1	30	08/14/18	
Pyrene	0.092	0.0014	0.050	ug/L	0.10		92	52-115	4	30	08/14/18	
Surrogate: 2,4,6-Tribromophenol	*4.2*				*5.0*		*84*	*53-200*			08/14/18	
Surrogate: 2-Fluorobiphenyl	*4.1*				*5.0*		*81*	*40-127*			08/14/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*80*	*42-123*			08/14/18	
Surrogate: Nitrobenzene-d5	*4.3*				*5.0*		*85*	*49-133*			08/14/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*87*	*52-125*			08/14/18	
Surrogate: p-Terphenyl-d14	*4.3*				*5.0*		*86*	*39-135*			08/14/18	
Matrix Spike (A811413-MS1), Source: A8H0251-01												
1,2,4-Trichlorobenzene	3.2	0.50	2.5	ug/L	4.9	ND	66	44-142			08/14/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.1	0.50	2.5	ug/L	4.9	ND	63	30-130			08/14/18	
2,4,6-Trichlorophenol	4.7	0.70	10	ug/L	4.9	ND	95	37-144			08/14/18	J
2,4-Dichlorophenol	4.0	0.50	2.5	ug/L	4.9	ND	82	39-135			08/14/18	
2,4-Dimethylphenol	2.6	0.76	2.5	ug/L	4.9	ND	54	32-119			08/14/18	
2,4-Dinitrophenol	7.5	1.4	5.0	ug/L	4.9	ND	153	10-191			08/14/18	
2,4-Dinitrotoluene	5.9	0.50	5.0	ug/L	4.9	ND	120	39-139			08/14/18	
2,6-Dinitrotoluene	5.8	1.8	5.0	ug/L	4.9	ND	118	50-158			08/14/18	
2-Chloronaphthalene	3.7	0.50	10	ug/L	4.9	ND	75	60-118			08/14/18	J
2-Chlorophenol	3.8	0.56	2.5	ug/L	4.9	ND	77	23-134			08/14/18	
2-Nitrophenol	4.3	1.1	10	ug/L	4.9	ND	88	29-182			08/14/18	J
3,3-Dichlorobenzidine	ND	2.7	10	ug/L	20	ND	0	10-200			08/14/18	MS1.3 ***Low***
4,6-Dinitro-2-methylphenol	5.6	0.53	5.0	ug/L	4.9	ND	114	10-181			08/14/18	
4-Bromophenyl phenyl ether	4.7	0.50	5.0	ug/L	4.9	ND	97	53-127			08/14/18	J

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A811413-MS1), Source: A8H0251-01												
4-Chloro-3-methylphenol	4.7	0.50	2.5	ug/L	4.9	ND	96	22-147			08/14/18	
4-Chlorophenyl phenyl ether	4.4	1.2	5.0	ug/L	4.9	ND	91	25-158			08/14/18	J
4-Nitrophenol	5.8	1.3	5.0	ug/L	4.9	ND	119	10-132			08/14/18	
Acenaphthene	0.098	0.020	0.50	ug/L	0.098	ND	100	47-145			08/14/18	J
Acenaphthylene	0.080	0.011	0.20	ug/L	0.098	ND	82	33-145			08/14/18	J
Anthracene	0.094	0.0098	2.0	ug/L	0.098	ND	96	27-133			08/14/18	J
Benzidine	ND	7.0	25	ug/L	20	ND	0	10-200			08/14/18	MS1.3 ***Low***
Benzo(a)anthracene	0.070	0.011	5.0	ug/L	0.098	ND	72	33-143			08/14/18	J
Benzo(a)pyrene	0.085	0.016	2.0	ug/L	0.098	ND	87	17-163			08/14/18	J
Benzo(b)fluoranthene	0.13	0.010	10	ug/L	0.098	ND	128	24-159			08/14/18	J
Benzo(g,h,i)perylene	0.052	0.019	0.10	ug/L	0.098	ND	54	10-200			08/14/18	J
Benzo(k)fluoranthene	0.080	0.014	2.0	ug/L	0.098	ND	82	11-162			08/14/18	J
Bis(2-chloroethoxy)methane	3.9	0.50	5.0	ug/L	4.9	ND	80	33-184			08/14/18	J
Bis(2-chloroethyl) ether	3.6	0.74	2.5	ug/L	4.9	ND	73	12-158			08/14/18	
Bis(2-chloroisopropyl) ether	4.0	0.63	2.5	ug/L	4.9	ND	81	36-166			08/14/18	
Bis(2-ethylhexyl) phthalate	2.8	1.5	5.0	ug/L	4.9	ND	58	10-158			08/14/18	J
Butyl benzyl phthalate	3.9	0.50	10	ug/L	4.9	ND	79	10-152			08/14/18	J
Chrysene	0.071	0.0057	5.0	ug/L	0.098	ND	73	17-168			08/14/18	J
Dibenzo(a,h)anthracene	0.075	0.016	0.10	ug/L	0.098	ND	77	10-200			08/14/18	J
Diethyl phthalate	4.5	0.50	2.5	ug/L	4.9	ND	91	10-114			08/14/18	
Dimethyl phthalate	4.6	0.50	2.5	ug/L	4.9	ND	95	10-112			08/14/18	
Di-n-butyl phthalate	4.7	0.68	10	ug/L	4.9	ND	96	10-118			08/14/18	J
Di-n-octyl phthalate	3.1	0.53	10	ug/L	4.9	ND	63	10-146			08/14/18	J
Fluoranthene	0.11	0.0061	0.050	ug/L	0.098	ND	108	26-137			08/14/18	
Fluorene	0.11	0.022	0.10	ug/L	0.098	ND	112	59-121			08/14/18	
Hexachlorobenzene	4.5	0.76	2.5	ug/L	4.9	ND	92	10-152			08/14/18	
Hexachlorobutadiene	3.2	0.67	2.5	ug/L	4.9	ND	65	24-116			08/14/18	
Hexachlorocyclopentadiene	1.8	0.68	5.0	ug/L	4.9	ND	37	10-130			08/14/18	J
Indeno(1,2,3-cd)pyrene	0.087	0.013	0.050	ug/L	0.098	ND	89	10-171			08/14/18	
Isophorone	4.0	0.57	2.5	ug/L	4.9	ND	82	21-196			08/14/18	
Naphthalene	0.23	0.014	0.20	ug/L	0.098	0.16	72	21-133			08/14/18	
Nitrobenzene	4.5	0.53	2.5	ug/L	4.9	ND	93	35-180			08/14/18	
N-Nitrosodimethylamine (NDMA)	3.1	2.4	5.0	ug/L	4.9	ND	64	10-130			08/14/18	J
N-Nitrosodi-n-propylamine (NDPA)	3.9	0.51	5.0	ug/L	4.9	ND	80	10-200			08/14/18	J
N-Nitrosodiphenylamine (as DPA)	4.1	1.2	2.5	ug/L	4.9	ND	84	10-130			08/14/18	
Pentachlorophenol	6.7	1.0	5.0	ug/L	4.9	ND	137	14-176			08/14/18	
Phenanthrene	0.10	0.012	0.050	ug/L	0.098	ND	103	54-120			08/14/18	
Phenol	4.4	0.50	2.5	ug/L	4.9	ND	89	10-112			08/14/18	
Pyrene	0.092	0.0072	0.050	ug/L	0.098	ND	94	52-115			08/14/18	
Surrogate: 2,4,6-Tribromophenol	*9.5*				*4.9*		*195*	*53-200*			08/14/18	
Surrogate: 2-Fluorobiphenyl	*4.2*				*4.9*		*86*	*40-127*			08/14/18	
Surrogate: 2-Fluorophenol	*3.5*				*4.9*		*72*	*42-123*			08/14/18	
Surrogate: Nitrobenzene-d5	*4.7*				*4.9*		*97*	*49-133*			08/14/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A811413											Prepared: 8/8/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A811413-MS1), Source: A8H0251-01												
Surrogate: Phenol-d6	*4.2*				*4.9*		*86*	*52-125*			08/14/18	
Surrogate: p-Terphenyl-d14	*4.6*				*4.9*		*93*	*39-135*			08/14/18	

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Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-002	State of California - ELAP	2993
State of Oregon - NELAP	4119-002				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-17

A8H0887

08082018

Abalo1080

Turnaround: Standard
Due Date: 8/22/2018

Abalone Coast Analytical, Inc.

Printed: 8/8/2018 4:43:27PM

1.9, 2.0 °C TSS

A8H0887 08/08/2018
Abalo1080 10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

24 Hr [ ] y [ ] Lab Reference # 18 - 5022

Client Full Name/ Business:	Address	City	State	Zip
City of Pismo Beach				
Bill To: **Same**				

Phone # (805)773-7075
Fax #
Cell #

Sign/Print Samplers Full Name
Hailie Hit
Hailie Hit

Project:	R/O Brine Analysis
Contact Full Name:	Russ Fleming

	Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
1	R/O Brine	08/07/18	BOD, TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	1x p/unp half gal, p/unp 1 liter	-1
		1015	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
						3x VV/HCl, 1x VV/unp	
2	R/O Feed Water	08/07/18	BOD, TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
		0945	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
						3x VV/HCl, 1x VV/unp	

Relinquished By: Hailie Hit	Received By:	Received By: SE TCR	Lab:
Date/Time: 1030 08/07/18	Date/Time: 8/7/18 1111	Date/Time: 8/7/18 1123	
Lab:	Lab:	Lab:	Lab:

Method Of Shipment:
Client ✓
Courier
Other:

Condition
Intact (y/n) Y
Sediment N
Temp. 6.6
On Ice Yes No

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile: [ ]

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

Received: 8/8/18 1030
6.6 GSO

A8H0887 08/08/2018
Abalo1080 10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: Yes No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	Yes No NA	Were correct containers and preservatives received for the tests requested?	Yes No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No NA	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	Yes No NA Yes No NA
Did all bottles arrive unbroken and intact?	Yes No	Was a sufficient amount of sample received?	Yes No
Did all bottle labels agree with COC?	Yes No	Do samples have a hold time <72 hours?	Yes No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No NA	Was PM notified of discrepancies? PM: By/Time:	Yes No NA

Bottles Received ("I" means preservation/chlorine checks are either N/A or are performed in the lab)

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1-2				
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—	1C				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	P F					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F					
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	3C				
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C				
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label **DBPs**	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—	3C				
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other:							
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Solids: Brass / Steel / Plastic Bag	—	—					

8-8-18

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: @ 1136 Labels checked by: @ 1137 RUSH Paged by: @

External

A8H0887

CERES Analytical Laboratory, Inc.
4919 Windplay Dr Suite 1, El Dorado Hills, CA 95762

August 19, 2018

Ceres ID: 12269

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on August 10, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8H0887.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12269-001	R/O Brine A8H0887-01	8/10/2018	8/7/2018 10:15
12269-002	R/O Feed Water A8H0887-02	8/10/2018	8/7/2018 9:45

Section II: Data Summary

EPA Method 1613B

Quality Assurance Sample Method Blank		Date Received: NA
	QC Batch #: 1838	Date Extracted: 8/16/2018
	Matrix: Waste Water	ZB-5MS Analysis: 8/17/2018
Project ID: A8H0887	Sample Size: 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 4.29	0.887	5.00		13C-2378-TCDD	109	25-164	
12378-PeCDD	DL= 3.41	2.56	25.0		13C-12378-PeCDD	114	25-181	
123478-HxCDD	DL= 5.68	3.08	25.0		13C-123478-HxCDD	88.8	32-141	
123678-HxCDD	DL= 6.08	5.29	25.0		13C-123678-HxCDD	86.9	28-130	
123789-HxCDD	DL= 5.76	13.1	25.0		13C-1234678-HpCDD	95.3	23-140	
1234678-HpCDD	DL= 4.19	5.15	25.0		13C-OCDD	87.5	17-157	
OCDD	DL= 5.85	8.50	50.0		13C-2378-TCDF	143	24-169	
2,3,7,8-TCDF	DL= 2.04	0.733	5.00		13C-12378-PeCDF	115	24-185	
12378-PeCDF	DL= 3.27	2.96	25.0		13C-23478-PeCDF	105	21-178	
23478-PeCDF	DL= 3.21	5.40	25.0		13C-123478-HxCDF	108	26-152	
123478-HxCDF	DL= 2.57	3.93	25.0		13C-123678-HxCDF	97.1	26-123	
123678-HxCDF	DL= 3.01	2.94	25.0		13C-234678-HxCDF	95.2	28-136	
234678-HxCDF	DL= 2.93	4.32	25.0		13C-123789-HxCDF	90.5	29-147	
123789-HxCDF	DL= 3.83	4.70	25.0		13C-1234678-HpCDF	92.9	28-143	
1234678-HpCDF	DL= 4.39	4.24	25.0		13C-1234789-HpCDF	87.2	26-138	
1234789-HpCDF	DL= 6.03	5.74	25.0					
OCDF	DL= 5.44	11.7	50.0					

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.29	
Total PeCDD	DL= 3.41	
Total HxCDD	DL= 6.08	
Total HpCDD	DL= 4.19	
Total TCDF	DL= 2.04	
Total PeCDF	DL= 3.27	
Total HxCDF	DL= 3.83	
Total HpCDF	DL= 6.03	

CRS

37Cl4-2378-TCDD	83.1	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery **Project ID:** A8H0887	**QC Batch #:** 1838 **Matrix:** Waste Water **Sample Size:** 1.000 L	**Date Received:** NA **Date Extracted:** 8/16/2018 **ZB-5MS Analysis:** 8/17/2018

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	10.2	6.7-15.8	13C-2378-TCDD	105	20-175
12378-PeCDD	52.5	35-71	13C-12378-PeCDD	111	21-227
123478-HxCDD	52.0	35-82	13C-123478-HxCDD	86.3	21-193
123678-HxCDD	56.6	38-67	13C-123678-HxCDD	82.4	25-163
123789-HxCDD	58.4	32-81	13C-1234678-HpCDD	85.7	26-166
1234678-HpCDD	52.9	35-70	13C-OCDD	77.4	13-198
OCDD	110	78-144	13C-2378-TCDF	130	22-152
2,3,7,8-TCDF	10.9	7.5-15.8	13C-12378-PeCDF	108	21-192
12378-PeCDF	57.0	40-67	13C-23478-PeCDF	101	13-328
23478-PeCDF	56.3	34-80	13C-123478-HxCDF	96.1	19-202
123478-HxCDF	49.8	36-67	13C-123678-HxCDF	93.3	21-159
123678-HxCDF	50.0	42-65	13C-234678-HxCDF	88.6	22-176
234678-HxCDF	49.9	35-78	13C-123789-HxCDF	83.6	17-205
123789-HxCDF	51.2	39-65	13C-1234678-HpCDF	83.2	21-158
1234678-HpCDF	47.0	41-61	13C-1234789-HpCDF	78.4	20-186
1234789-HpCDF	47.1	39-69			
OCDF	94.1	63-170			
			CRS		
			37Cl4-2378-TCDD	96.7	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Brine A8H0887-01		
Project ID: A8H0887	**Ceres Sample ID:** 12269-001	**Date Received:** 8/10/2018
	QC Batch #: 1838	**Date Extracted:** 8/16/2018
Date Collected: 8/7/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/17/2018
Time Collected: 10:15	**Sample Size:** 1.018 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.42	0.887	4.91	
12378-PeCDD	DL= 6.56	2.56	24.6	
123478-HxCDD	DL= 9.47	3.08	24.6	
123678-HxCDD	DL= 10.9	5.29	24.6	
123789-HxCDD	DL= 9.95	13.1	24.6	
1234678-HpCDD	DL= 11.7	5.15	24.6	
OCDD	DL= 10.7	8.50	49.1	
2,3,7,8-TCDF	DL= 3.56	0.733	4.91	
12378-PeCDF	DL= 7.29	2.96	24.6	
23478-PeCDF	DL= 5.74	5.40	24.6	
123478-HxCDF	DL= 5.29	3.93	24.6	
123678-HxCDF	DL= 5.27	2.94	24.6	
234678-HxCDF	DL= 5.32	4.32	24.6	
123789-HxCDF	DL= 6.55	4.70	24.6	
1234678-HpCDF	DL= 5.12	4.24	24.6	
1234789-HpCDF	DL= 6.17	5.74	24.6	
OCDF	DL= 10.4	11.7	49.1	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.42	
Total PeCDD	DL= 6.56	
Total HxCDD	DL= 10.9	
Total HpCDD	DL= 11.7	
Total TCDF	DL= 3.56	
Total PeCDF	DL= 7.29	
Total HxCDF	DL= 6.55	
Total HpCDF	DL= 6.17	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	67.3	25-164	
13C-12378-PeCDD	48.2	25-181	
13C-123478-HxCDD	49.8	32-141	
13C-123678-HxCDD	50.0	28-130	
13C-1234678-HpCDD	47.1	23-140	
13C-OCDD	32.9	17-157	
13C-2378-TCDF	75.8	24-169	
13C-12378-PeCDF	42.1	24-185	
13C-23478-PeCDF	46.8	21-178	
13C-123478-HxCDF	56.3	26-152	
13C-123678-HxCDF	54.0	26-123	
13C-234678-HxCDF	52.7	28-136	
13C-123789-HxCDF	50.8	29-147	
13C-1234678-HpCDF	42.9	28-143	
13C-1234789-HpCDF	43.5	26-138	

CRS			
37Cl4-2378-TCDD	111	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.

EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.

(a) - Lower control limit - Upper control limit

(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Feed Water A8H0887-02		
Project ID: A8H0887	**Ceres Sample ID:** 12269-002	**Date Received:** 8/10/2018
	QC Batch #: 1838	**Date Extracted:** 8/16/2018
Date Collected: 8/7/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/17/2018
Time Collected: 9:45	**Sample Size:** 1.004 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 3.74	0.887	4.98	
12378-PeCDD	DL= 7.43	2.56	24.9	
123478-HxCDD	DL= 12.9	3.08	24.9	
123678-HxCDD	DL= 13.0	5.29	24.9	
123789-HxCDD	DL= 12.7	13.1	24.9	
1234678-HpCDD	DL= 8.95	5.15	24.9	
OCDD	DL= 13.3	8.50	49.8	
2,3,7,8-TCDF	DL= 4.37	0.733	4.98	
12378-PeCDF	DL= 7.03	2.96	24.9	
23478-PeCDF	DL= 5.66	5.40	24.9	
123478-HxCDF	DL= 7.12	3.93	24.9	
123678-HxCDF	DL= 8.21	2.94	24.9	
234678-HxCDF	DL= 7.08	4.32	24.9	
123789-HxCDF	DL= 9.40	4.70	24.9	
1234678-HpCDF	DL= 7.45	4.24	24.9	
1234789-HpCDF	DL= 8.87	5.74	24.9	
OCDF	DL= 14.5	11.7	49.8	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.74	
Total PeCDD	DL= 7.43	
Total HxCDD	DL= 13.0	
Total HpCDD	DL= 8.95	
Total TCDF	DL= 4.37	
Total PeCDF	DL= 7.03	
Total HxCDF	DL= 9.40	
Total HpCDF	DL= 8.87	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	60.1	25-164	
13C-12378-PeCDD	40.4	25-181	
13C-123478-HxCDD	40.5	32-141	
13C-123678-HxCDD	41.4	28-130	
13C-1234678-HpCDD	38.2	23-140	
13C-OCDD	27.7	17-157	
13C-2378-TCDF	72.0	24-169	
13C-12378-PeCDF	36.3	24-185	
13C-23478-PeCDF	40.3	21-178	
13C-123478-HxCDF	44.7	26-152	
13C-123678-HxCDF	39.7	26-123	
13C-234678-HxCDF	42.4	28-136	
13C-123789-HxCDF	40.2	29-147	
13C-1234678-HpCDF	35.6	28-143	
13C-1234789-HpCDF	37.2	26-138	

CRS

37Cl4-2378-TCDD	119	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H0887

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc			Sample Date
A8H0887-01	**R/O Brine**	**Client Matrix**	Water	**08/07/2018 10:15**
Lab Matrix:	Water			
	Analysis: Cl) L AG None			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			
A8H0887-02	**R/O Feed Water**	**Client Matrix**	Water	**08/07/2018 09:45**
Lab Matrix:	Water			
	Analysis: f			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			

Released By	Date	Received By	Date
8.9.18		8/10/18 09:58	
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: JK (initials)

Ceres ID: 12269	Date/Time: 8/10/18 09:58
Client Project ID: A8H0887	Received Temp: 2.2 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?	(Y) / N
Chain of Custody Received by signed?	(Y) N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	(NA)
Unlabeled / Illegible Samples	Y / (N)
Proper Containers:	(Y) / N
Preservation Acceptable (Chemical or Temperature)?	(Y) / N
Drinking Water, Sodium Thiosulfate present?	Y / (N) / NA
Residual Cl?	Y (N)
Aqueous sample pH: 7-5, 7-6	
List COC discrepancies: JK 8/10/18	
List Damaged Samples: JK 8/10/18	

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: August 30, 2018

Work Order Number: A8H0887

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8H0887-01 R/O Brine	08/07/18 (10:15)	Water	900.0 901.1	Gross Beta K-40	101.26 614	± ±	7.57 135	7.73 279
A8H0887-02 R/O Feed Water	08/07/18 (09:45)	Water	900.0 901.1	Gross Beta K-40	22.96 ND	± ±	1.77 100	1.87 282

Analyses Date: August 27-29, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	328.76 pCi	311.12 pCi	94.63	5.37	A
Gamma (Cs-137)	786.26 pCi	753.92 pCi	95.88	4.12	A

Flag:

A = result accepted, Bias $\leq$ 20%
N = result not acceptable, Bias > 20%

Patricia Davi
Patricia Davi
QA/QC Manager
Davi Laboratories

2508 23, 24

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H0887

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Davi Laboratories
730 Alfred Nobel Drive
Hercules, CA 94547-1805
Phone :(510) 724-9450
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc		Sample Date
A8H0887-01	**R/O Brine**	**Client Matrix** Water	**08/07/2018 10:15**
Lab Matrix:	Water		
23	**Analysis:**		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	
A8H0887-02	**R/O Feed Water**	**Client Matrix** Water	**08/07/2018 09:45**
Lab Matrix:	Water		
24	**Analysis:**		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	

Released By 8-18-18 Date | Received By Angela Davi 8/14/18 13:40 Date

Released By Date | Received By Date

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8H1767
9/07/2018
Invoice: A826135

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8H1767 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 8/14/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Michelle Kawaguchi

Michelle Kawaguchi, Project Manager

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-5135-2 City of Pismo Beach	**Project PO#:**	-
Received:	8/14/2018 - 13:51		
Report Due:	8/28/2018		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt ºC: 2.0

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Detailed Narrative

Analysis Comment

Date: 08/22/2018
Initials: JMS
Comment: The Residual Chlorine analysis was initially preformed by method SM 4500-CL B within hold time but the results were suspect by the laboratory. Residual Chlorine analysis was preformed again using the same method and confirmed the results. The results were still suspected as inaccurate due to a matrix interference, possibly high concentration of an oxidizing agent. The sample was re-analyzed out of hold time using theSM 4500-CL G Method and the results were significantly lower (reported as Chlorine, Colormetric)

Chain of Custody Notes

Date: 8/14/18
Initials: MKK
Note: R/O Feed Water only as per bottles received and highlighted items on COC.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
B2.1	Analyte detected in associated method blank below the reporting limit. No material impact on reported result as sample is ND for this parameter.
B2.2	Analyte detected in associated method blank below the reporting limit. Sample result may be attributable to ambient laboratory background.
BS	Blank spike recoveries did not meet acceptance limits.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
BS4.0	BS/BSD RPD exceeded the method acceptance limit as one of the blank spikes recovered outside limits.
CV0.0	CCV recovery was above method acceptance limits; no material impact on reported result as sample is ND for this parameter.
HT.x	Sample was originally extracted within hold time but this analyte failed low on the Blank Spike. Sample was re-extracted out of hold time with Blank Spike recoveries within limits for this analyte.
HT1.3	Holding time exceeded. Sample was analyzed past the holding time.
HT1.4	Initial analysis was performed within the holding time. However, a required dilution/re-extraction was performed past the holding time.
J	Estimated value
MS1.0	Matrix spike recoveries exceed control limits.
MS1.2	Matrix spike recovery exceeds lower control limit. Reported results for parent matrix should be considered estimated due to matrix interferences.
MS1.5	Matrix spike recovery exceeds upper control limit. No material impact as sample results are Non-Detected.
X	See case narrative.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

Certificate of Analysis

Sample ID: A8H1767-01
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/13/18 - 10:20
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Chlorine, Free	SM 4500-Cl G	ND		0.10	mg/L	1	A812153	08/20/18 16:51	08/20/18	HT1.3, X
Chlorine, Total	SM 4500-Cl G	ND		0.10	mg/L	1	A812153	08/20/18 16:51	08/20/18	HT1.3, X
Chlorine, Residual (1)	SM 4500-Cl B	**25**		0.10	mg/L	1	A811902	08/15/18 17:15	08/15/18	X

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**1.9**		0.20	ug/L	2	A811874	08/15/18	08/17/18	
Copper	EPA 200.8 DRC	**3.3**		1.1	ug/L	1	A811874	08/15/18	08/16/18	
Nickel	EPA 200.8 DRC	**3.9**		1.0	ug/L	1	A811874	08/15/18	08/16/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A812088	08/20/18	08/22/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A812088	08/20/18	08/22/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A812088	08/20/18	08/22/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A812088	08/20/18	08/22/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A812088	08/20/18	08/22/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A812088	08/20/18	08/22/18	
delta-BHC	EPA 608	ND	0.00060	0.0050	ug/L	1	A812088	08/20/18	08/22/18	MS1.5
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A812088	08/20/18	08/22/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A812088	08/20/18	08/22/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A812088	08/20/18	08/22/18	MS1.5
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Lindane	EPA 608	ND	0.025	0.050	ug/L	10	A812088	08/20/18	08/23/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Surrogate: TCMX	EPA 608	97 %		*Acceptable range: 26-144 %*						

Volatile Organics by GC-MS

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H1767-01
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/13/18 - 10:20
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811941	08/15/18	08/15/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811941	08/15/18	08/15/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811941	08/15/18	08/15/18	
Acetone	EPA 624	**1.8**	1.4	20	ug/L	1	A811941	08/15/18	08/15/18	J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Bromodichloromethane	EPA 624	**0.20**	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	J
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A811941	08/15/18	08/15/18	B2.1, CV0.0
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811941	08/15/18	08/15/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chloroform	EPA 624	**0.57**	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chloromethane	EPA 624	**0.33**	0.18	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.2, J
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Dibromochloromethane	EPA 624	ND	0.085	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811941	08/15/18	08/15/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Ethylbenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811941	08/15/18	08/15/18	
m,p-Xylenes	EPA 624	ND	0.22	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811941	08/15/18	08/15/18	
o-Xylene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811941	08/15/18	08/15/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
Toluene	EPA 624	**0.28**	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	J
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	

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Certificate of Analysis

Sample ID: A8H1767-01
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/13/18 - 10:20
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
Surrogate: 1,2-Dichloroethane-d4	EPA 624	102 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	100 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	94 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A812091	08/20/18	08/24/18	
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A812091	08/20/18	08/24/18	MS1.2
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A812091	08/20/18	08/24/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A812091	08/20/18	08/24/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A812091	08/20/18	08/24/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A812091	08/20/18	08/24/18	MS1.2
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A812091	08/20/18	08/24/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A812091	08/20/18	08/24/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A812091	08/20/18	08/24/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0, MS1.2
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A812091	08/20/18	08/24/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A812091	08/20/18	08/24/18	
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A812091	08/20/18	08/24/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A812091	08/20/18	08/24/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A812091	08/20/18	08/24/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A812091	08/20/18	08/24/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A812091	08/20/18	08/24/18	

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Certificate of Analysis

Sample ID: A8H1767-01
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/13/18 - 10:20
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A812091	08/20/18	08/24/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0, MS1.2
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A812091	08/20/18	08/24/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Naphthalene	EPA 625	ND	0.0027	0.20	ug/L	1	A812091	08/20/18	08/24/18	
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A812091	08/20/18	08/24/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A812091	08/20/18	08/24/18	
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A812091	08/20/18	08/24/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A812091	08/20/18	08/24/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	190 %		*Acceptable range: 53-200 %*						
Surrogate: 2-Fluorobiphenyl	EPA 625	78 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	87 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	86 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	95 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	88 %		*Acceptable range: 39-135 %*						

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Certificate of Analysis

Sample ID: A8H1767-01RE1
Sampled By: Hailie Hix
Sample Description: R/O Feed Water

Sample Date - Time: 08/13/18 - 10:20
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A812604	08/27/18	08/31/18	HT.x
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A812604	08/27/18	08/31/18	HT.x
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A812604	08/27/18	08/31/18	HT.x
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A812604	08/27/18	08/31/18	BS2.0
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A812604	08/27/18	08/31/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	168 %		*Acceptable range: 53-200 %*				*Qualifiers - HT1.4*		
Surrogate: 2-Fluorobiphenyl	EPA 625	86 %		*Acceptable range: 40-127 %*				*Qualifiers - HT1.4*		
Surrogate: 2-Fluorophenol	EPA 625	75 %		*Acceptable range: 42-123 %*				*Qualifiers - HT1.4*		
Surrogate: Nitrobenzene-d5	EPA 625	85 %		*Acceptable range: 49-133 %*				*Qualifiers - HT1.4*		
Surrogate: Phenol-d6	EPA 625	98 %		*Acceptable range: 52-125 %*				*Qualifiers - HT1.4*		
Surrogate: p-Terphenyl-d14	EPA 625	96 %		*Acceptable range: 39-135 %*				*Qualifiers - HT1.4*		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK Associates Laboratory Fresno
General Chemistry Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
SM 4500-Cl B - Quality Control												
Batch: A811902											Prepared: 8/15/2018	
Prep Method: Method Specific Preparation											Analyst: NDR	
Blank (A811902-BLK1)												
Chlorine, Residual (1)	ND		0.10	mg/L							08/15/18	
Blank Spike (A811902-BS1)												
Chlorine, Residual (1)	5.0		0.10	mg/L	5.0		99	80-120			08/15/18	
Duplicate (A811902-DUP1), Source: A8H1912-01												
Chlorine, Residual (1)	ND		0.10	mg/L		ND				20	08/15/18	
SM 4500-Cl G - Quality Control												
Batch: A812153											Prepared: 8/20/2018	
Prep Method: Method Specific Preparation											Analyst: BCB	
Blank (A812153-BLK1)												
Chlorine, Free	ND		0.10	mg/L							08/20/18	
Chlorine, Total	ND		0.10	mg/L							08/20/18	
Blank Spike (A812153-BS1)												
Chlorine, Free	0.98		0.10	mg/L	1.0		98	80-120			08/20/18	
Chlorine, Total	0.98		0.10	mg/L	1.0		98	80-120			08/20/18	
Duplicate (A812153-DUP1), Source: A8H2502-01												
Chlorine, Free	ND		0.10	mg/L		ND				20	08/20/18	
Chlorine, Total	ND		0.10	mg/L		ND				20	08/20/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK Associates Laboratory Fresno

Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A811874											Prepared: 8/15/2018	
Prep Method: EPA 200.2 DRC											Analyst: PSK	
Blank (A811874-BLK1)												
Copper	ND		1.1	ug/L							08/16/18	
Nickel	ND		1.0	ug/L							08/16/18	
Blank (A811874-BLK2)												
Arsenic	ND		0.10	ug/L							08/17/18	
Blank Spike (A811874-BS1)												
Copper	49		1.1	ug/L	50		99	85-115			08/16/18	
Nickel	50		1.0	ug/L	50		99	85-115			08/16/18	
Blank Spike (A811874-BS2)												
Arsenic	48		0.10	ug/L	50		96	85-115			08/17/18	
Blank Spike Dup (A811874-BSD1)												
Copper	49		1.1	ug/L	50		98	85-115	1	20	08/16/18	
Nickel	51		1.0	ug/L	50		102	85-115	3	20	08/16/18	
Blank Spike Dup (A811874-BSD2)												
Arsenic	50		0.10	ug/L	50		99	85-115	4	20	08/17/18	
Matrix Spike (A811874-MS1), Source: A8H1875-02												
Copper	41		1.1	ug/L	50	2.4	76	70-130			08/16/18	
Nickel	44		1.0	ug/L	50	4.2	80	70-130			08/16/18	
Matrix Spike (A811874-MS2), Source: A8H1875-02												
Arsenic	64		0.50	ug/L	50	11	106	70-130			08/17/18	
Matrix Spike Dup (A811874-MSD1), Source: A8H1875-02												
Copper	40		1.1	ug/L	50	2.4	75	70-130	1	20	08/16/18	
Nickel	44		1.0	ug/L	50	4.2	79	70-130	1	20	08/16/18	
Matrix Spike Dup (A811874-MSD2), Source: A8H1875-02												
Arsenic	62		0.50	ug/L	50	11	102	70-130	3	20	08/17/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A812088											Prepared: 8/20/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank (A812088-BLK1)												
4,4'-DDD	ND	0.00072	0.050	ug/L							08/22/18	
4,4'-DDE	ND	0.00061	0.050	ug/L							08/22/18	
4,4'-DDT	ND	0.00070	0.010	ug/L							08/22/18	
Aldrin	ND	0.00079	0.0050	ug/L							08/22/18	
alpha-BHC	ND	0.0025	0.010	ug/L							08/22/18	
Aroclor-1016	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1221	ND	0.063	0.50	ug/L							08/22/18	
Aroclor-1232	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1242	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1248	ND	0.020	0.50	ug/L							08/22/18	
Aroclor-1254	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1260	ND	0.015	0.50	ug/L							08/22/18	
beta-BHC	ND	0.00054	0.0050	ug/L							08/22/18	
Chlordane	ND	0.026	0.10	ug/L							08/22/18	
delta-BHC	ND	0.00060	0.0050	ug/L							08/22/18	
Dieldrin	ND	0.00097	0.010	ug/L							08/22/18	
Endosulfan I	ND	0.00089	0.020	ug/L							08/22/18	
Endosulfan II	ND	0.0018	0.010	ug/L							08/22/18	
Endosulfan Sulfate	ND	0.00074	0.050	ug/L							08/22/18	
Endrin	ND	0.00081	0.010	ug/L							08/22/18	
Endrin Aldehyde	ND	0.00067	0.010	ug/L							08/22/18	
Heptachlor	ND	0.00069	0.010	ug/L							08/22/18	
Heptachlor Epoxide	ND	0.00069	0.010	ug/L							08/22/18	
Lindane	ND	0.0025	0.020	ug/L							08/22/18	
Toxaphene	ND	0.035	0.50	ug/L							08/22/18	
Surrogate: TCMX	*0.28*				*0.30*		*92*	*26-144*			08/22/18	
Blank Spike (A812088-BS1)												
4,4'-DDD	0.038	0.00072	0.050	ug/L	0.040		96	63-146			08/22/18	J
4,4'-DDE	0.039	0.00061	0.050	ug/L	0.040		99	49-150			08/22/18	J
4,4'-DDT	0.038	0.00070	0.010	ug/L	0.040		95	66-146			08/22/18	
Aldrin	0.037	0.00079	0.0050	ug/L	0.040		93	24-144			08/22/18	
alpha-BHC	0.036	0.0025	0.010	ug/L	0.040		91	32-176			08/22/18	
beta-BHC	0.039	0.00054	0.0050	ug/L	0.040		97	59-152			08/22/18	
delta-BHC	0.037	0.00060	0.0050	ug/L	0.040		92	46-156			08/22/18	
Dieldrin	0.038	0.00097	0.010	ug/L	0.040		95	62-146			08/22/18	
Endosulfan I	0.039	0.00089	0.020	ug/L	0.040		97	53-151			08/22/18	
Endosulfan II	0.040	0.0018	0.010	ug/L	0.040		100	63-144			08/22/18	
Endosulfan Sulfate	0.038	0.00074	0.050	ug/L	0.040		94	65-145			08/22/18	J
Endrin	0.042	0.00081	0.010	ug/L	0.040		106	55-153			08/22/18	
Endrin Aldehyde	0.031	0.00067	0.010	ug/L	0.040		79	68-128			08/22/18	
Heptachlor	0.046	0.00069	0.010	ug/L	0.040		116	34-147			08/22/18	
Heptachlor Epoxide	0.040	0.00069	0.010	ug/L	0.040		99	57-150			08/22/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A812088											Prepared: 8/20/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank Spike (A812088-BS1)												
Lindane	0.036	0.0025	0.020	ug/L	0.040		89	58-148			08/22/18	
Surrogate: TCMX	*0.27*				*0.30*		*91*	*26-144*			08/22/18	
Blank Spike Dup (A812088-BSD1)												
4,4'-DDD	0.041	0.00072	0.050	ug/L	0.040		103	63-146	7	20	08/22/18	J
4,4'-DDE	0.042	0.00061	0.050	ug/L	0.040		104	49-150	6	20	08/22/18	J
4,4'-DDT	0.040	0.00070	0.010	ug/L	0.040		100	66-146	5	20	08/22/18	
Aldrin	0.040	0.00079	0.0050	ug/L	0.040		100	24-144	7	20	08/22/18	
alpha-BHC	0.037	0.0025	0.010	ug/L	0.040		92	32-176	1	20	08/22/18	
beta-BHC	0.040	0.00054	0.0050	ug/L	0.040		99	59-152	3	20	08/22/18	
delta-BHC	0.043	0.00060	0.0050	ug/L	0.040		107	46-156	15	20	08/22/18	
Dieldrin	0.040	0.00097	0.010	ug/L	0.040		100	62-146	5	20	08/22/18	
Endosulfan I	0.040	0.00089	0.020	ug/L	0.040		101	53-151	4	20	08/22/18	
Endosulfan II	0.042	0.0018	0.010	ug/L	0.040		106	63-144	6	20	08/22/18	
Endosulfan Sulfate	0.040	0.00074	0.050	ug/L	0.040		101	65-145	7	20	08/22/18	J
Endrin	0.038	0.00081	0.010	ug/L	0.040		94	55-153	11	20	08/22/18	
Endrin Aldehyde	0.034	0.00067	0.010	ug/L	0.040		85	68-128	8	20	08/22/18	
Heptachlor	0.049	0.00069	0.010	ug/L	0.040		123	34-147	6	20	08/22/18	
Heptachlor Epoxide	0.039	0.00069	0.010	ug/L	0.040		99	57-150	0	20	08/22/18	
Lindane	0.037	0.0025	0.020	ug/L	0.040		93	58-148	4	20	08/22/18	
Surrogate: TCMX	*0.26*				*0.30*		*88*	*26-144*			08/22/18	
Matrix Spike (A812088-MS1), Source: A8H1767-01												
4,4'-DDD	0.030	0.00072	0.050	ug/L	0.040	ND	75	63-146			08/22/18	J
4,4'-DDE	0.036	0.00061	0.050	ug/L	0.040	ND	89	49-150			08/22/18	J
4,4'-DDT	0.037	0.00070	0.010	ug/L	0.040	ND	91	66-146			08/22/18	
Aldrin	0.045	0.00079	0.0050	ug/L	0.040	ND	111	24-144			08/22/18	
alpha-BHC	0.032	0.0025	0.010	ug/L	0.040	ND	79	32-176			08/22/18	
beta-BHC	0.032	0.00054	0.0050	ug/L	0.040	ND	80	59-152			08/22/18	
delta-BHC	0.075	0.00060	0.0050	ug/L	0.040	ND	186	46-156			08/22/18	MS1.0 ***High***
Dieldrin	0.032	0.00097	0.010	ug/L	0.040	ND	79	62-146			08/22/18	
Endosulfan I	0.036	0.00089	0.020	ug/L	0.040	ND	89	53-151			08/22/18	
Endosulfan II	0.035	0.0018	0.010	ug/L	0.040	ND	88	63-144			08/22/18	
Endosulfan Sulfate	0.038	0.00074	0.050	ug/L	0.040	ND	94	65-145			08/22/18	J
Endrin	0.043	0.00081	0.010	ug/L	0.040	ND	108	55-153			08/22/18	
Endrin Aldehyde	0.018	0.00067	0.010	ug/L	0.040	ND	45	68-128			08/22/18	MS1.0 ***Low***
Heptachlor	0.045	0.00069	0.010	ug/L	0.040	ND	113	34-147			08/22/18	
Heptachlor Epoxide	0.034	0.00069	0.010	ug/L	0.040	ND	85	57-150			08/22/18	
Lindane	0.055	0.025	0.050	ug/L	0.040	ND	136	58-148			08/23/18	
Surrogate: TCMX	*0.29*				*0.30*		*96*	*26-144*			08/22/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811941-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							08/15/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							08/15/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							08/15/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							08/15/18	
1,1-Dichloroethene	0.15	0.12	0.50	ug/L							08/15/18	B2.0, J
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							08/15/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							08/15/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							08/15/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							08/15/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							08/15/18	
2-Butanone	ND	1.2	20	ug/L							08/15/18	
2-Hexanone	ND	1.2	20	ug/L							08/15/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							08/15/18	
Acetone	ND	1.4	5.0	ug/L							08/15/18	
Benzene	ND	0.15	0.50	ug/L							08/15/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							08/15/18	
Bromoform	ND	0.14	0.50	ug/L							08/15/18	
Bromomethane	0.24	0.19	1.0	ug/L							08/15/18	B2.0, J
Carbon disulfide	ND	1.6	5.0	ug/L							08/15/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							08/15/18	
Chlorobenzene	ND	0.13	0.50	ug/L							08/15/18	
Chloroethane	ND	0.13	0.50	ug/L							08/15/18	
Chloroform	ND	0.10	0.50	ug/L							08/15/18	
Chloromethane	0.20	0.18	0.50	ug/L							08/15/18	B2.0, J
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							08/15/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							08/15/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							08/15/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							08/15/18	
Dichloromethane	ND	0.11	0.50	ug/L							08/15/18	
Ethylbenzene	ND	0.13	0.50	ug/L							08/15/18	
Hexachloroethane	ND	0.15	1.0	ug/L							08/15/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							08/15/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							08/15/18	
o-Xylene	ND	0.12	0.50	ug/L							08/15/18	
Styrene	ND	0.16	0.50	ug/L							08/15/18	
Tetrachloroethene (PCE)	0.12	0.11	0.50	ug/L							08/15/18	B2.0, J
Toluene	ND	0.14	0.50	ug/L							08/15/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							08/15/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							08/15/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							08/15/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811941-BLK1)												
Trichlorofluoromethane	ND	0.12	0.50	ug/L							08/15/18	
Vinyl Chloride	0.15	0.15	0.50	ug/L							08/15/18	B2.0, J
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*49*				*50*		*99*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*45*				*50*		*90*	*70-130*			08/15/18	
Blank Spike (A811941-BS1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		122	52-162			08/15/18	
1,1,2,2-Tetrachloroethane	9.6	0.12	0.50	ug/L	10		96	46-157			08/15/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		103	52-150			08/15/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10		117	59-155			08/15/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		120	10-234			08/15/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		100	18-190			08/15/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10		117	49-155			08/15/18	
1,2-Dichloropropane	12	0.12	0.50	ug/L	10		119	10-210			08/15/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		100	59-156			08/15/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190			08/15/18	
2-Butanone	11	1.2	20	ug/L	10		112	46-156			08/15/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135			08/15/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10		107	67-136			08/15/18	J
Acetone	11	1.4	5.0	ug/L	10		112	19-194			08/15/18	
Benzene	12	0.15	0.50	ug/L	10		118	37-151			08/15/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10		119	35-155			08/15/18	
Bromoform	10	0.14	0.50	ug/L	10		100	45-169			08/15/18	
Bromomethane	14	0.19	1.0	ug/L	10		144	10-242			08/15/18	
Carbon disulfide	12	1.6	5.0	ug/L	10		116	78-140			08/15/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		109	70-140			08/15/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		105	37-160			08/15/18	
Chloroethane	12	0.13	0.50	ug/L	10		121	14-230			08/15/18	
Chloroform	12	0.10	0.50	ug/L	10		117	51-138			08/15/18	
Chloromethane	14	0.18	0.50	ug/L	10		145	10-273			08/15/18	
cis-1,2-Dichloroethene	12	0.10	0.50	ug/L	10		119	81-130			08/15/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10		119	10-227			08/15/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		104	53-149			08/15/18	
Dichlorodifluoromethane	12	0.11	1.0	ug/L	10		123	52-171			08/15/18	
Dichloromethane	12	0.11	0.50	ug/L	10		120	10-221			08/15/18	
Ethylbenzene	11	0.13	0.50	ug/L	10		106	37-162			08/15/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		122	78-145			08/15/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		106	83-108			08/15/18	
Methyl-t-butyl ether	23	0.22	0.50	ug/L	20		117	79-131			08/15/18	
o-Xylene	11	0.12	0.50	ug/L	10		106	81-115			08/15/18	
Styrene	11	0.16	0.50	ug/L	10		106	78-117			08/15/18	
Tetrachloroethene (PCE)	10	0.11	0.50	ug/L	10		102	64-148			08/15/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A811941-BS1)												
Toluene	10	0.14	0.50	ug/L	10		104	47-150			08/15/18	
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10		121	54-156			08/15/18	
trans-1,3-Dichloropropene	11	0.12	0.50	ug/L	10		105	17-183			08/15/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		112	71-157			08/15/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10		124	17-181			08/15/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		125	10-251			08/15/18	
Surrogate: 1,2-Dichloroethane-d4	*54*				*50*		*107*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*48*				*50*		*96*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*46*				*50*		*91*	*70-130*			08/15/18	
Blank Spike Dup (A811941-BSD1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		120	52-162	1	30	08/15/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		101	46-157	5	30	08/15/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-150	1	30	08/15/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10		116	59-155	1	30	08/15/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		121	10-234	0	30	08/15/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190	2	30	08/15/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10		117	49-155	0	30	08/15/18	
1,2-Dichloropropane	12	0.12	0.50	ug/L	10		117	10-210	1	30	08/15/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		101	59-156	1	30	08/15/18	
1,4-Dichlorobenzene	11	0.12	0.50	ug/L	10		105	18-190	4	30	08/15/18	
2-Butanone	11	1.2	20	ug/L	10		112	46-156	1	30	08/15/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135	0	30	08/15/18	J
4-Methyl-2-pentanone	12	0.97	20	ug/L	10		118	67-136	9	30	08/15/18	J
Acetone	11	1.4	5.0	ug/L	10		109	19-194	3	30	08/15/18	
Benzene	12	0.15	0.50	ug/L	10		117	37-151	1	30	08/15/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10		117	35-155	1	30	08/15/18	
Bromoform	10	0.14	0.50	ug/L	10		104	45-169	4	30	08/15/18	
Bromomethane	14	0.19	1.0	ug/L	10		136	10-242	6	30	08/15/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		115	78-140	1	30	08/15/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		109	70-140	1	30	08/15/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		104	37-160	1	30	08/15/18	
Chloroethane	12	0.13	0.50	ug/L	10		119	14-230	2	30	08/15/18	
Chloroform	11	0.10	0.50	ug/L	10		112	51-138	4	30	08/15/18	
Chloromethane	14	0.18	0.50	ug/L	10		140	10-273	3	30	08/15/18	
cis-1,2-Dichloroethene	12	0.10	0.50	ug/L	10		117	81-130	2	30	08/15/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10		118	10-227	1	30	08/15/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		103	53-149	1	30	08/15/18	
Dichlorodifluoromethane	12	0.11	1.0	ug/L	10		123	52-171	0	30	08/15/18	
Dichloromethane	12	0.11	0.50	ug/L	10		117	10-221	2	30	08/15/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		103	37-162	2	30	08/15/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		124	78-145	2	30	08/15/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		104	83-108	1	30	08/15/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A811941-BSD1)												
Methyl-t-butyl ether	23	0.22	0.50	ug/L	20		116	79-131	1	30	08/15/18	
o-Xylene	10	0.12	0.50	ug/L	10		104	81-115	2	30	08/15/18	
Styrene	10	0.16	0.50	ug/L	10		104	78-117	2	30	08/15/18	
Tetrachloroethene (PCE)	9.8	0.11	0.50	ug/L	10		98	64-148	4	30	08/15/18	
Toluene	10	0.14	0.50	ug/L	10		104	47-150	0	30	08/15/18	
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10		118	54-156	2	30	08/15/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		104	17-183	1	30	08/15/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		108	71-157	4	30	08/15/18	
Trichlorofluoromethane	13	0.12	0.50	ug/L	10		126	17-181	1	30	08/15/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		124	10-251	1	30	08/15/18	
Surrogate: 1,2-Dichloroethane-d4	*52*				*50*		*105*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*101*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*47*				*50*		*94*	*70-130*			08/15/18	
Matrix Spike (A811941-MS1), Source: A8H1958-01												
1,1,1-Trichloroethane	14	0.14	0.50	ug/L	10	ND	136	52-162			08/15/18	
1,1,2,2-Tetrachloroethane	9.8	0.12	0.50	ug/L	10	ND	98	46-157			08/15/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	103	52-150			08/15/18	
1,1-Dichloroethane	13	0.11	0.50	ug/L	10	ND	128	59-155			08/15/18	
1,1-Dichloroethene	14	0.12	0.50	ug/L	10	0.15	134	10-234			08/15/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	102	18-190			08/15/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10	ND	123	49-155			08/15/18	
1,2-Dichloropropane	13	0.12	0.50	ug/L	10	ND	129	10-210			08/15/18	
1,3-Dichlorobenzene	11	0.11	0.50	ug/L	10	ND	105	59-156			08/15/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	104	18-190			08/15/18	
2-Butanone	13	1.2	20	ug/L	10	ND	131	46-156			08/15/18	J
2-Hexanone	10	1.2	20	ug/L	10	ND	101	56-135			08/15/18	J
4-Methyl-2-pentanone	13	0.97	20	ug/L	10	3.4	91	67-136			08/15/18	J
Acetone	13	1.4	5.0	ug/L	10	2.8	107	19-194			08/15/18	
Benzene	13	0.15	0.50	ug/L	10	ND	129	37-151			08/15/18	
Bromodichloromethane	57	0.10	0.50	ug/L	10	46	112	35-155			08/15/18	
Bromoform	11	0.14	0.50	ug/L	10	1.3	99	45-169			08/15/18	
Bromomethane	14	0.19	1.0	ug/L	10	ND	140	10-242			08/15/18	
Carbon disulfide	13	1.6	5.0	ug/L	10	ND	126	78-140			08/15/18	
Carbon Tetrachloride	13	0.10	0.50	ug/L	10	ND	126	70-140			08/15/18	
Chlorobenzene	11	0.13	0.50	ug/L	10	ND	108	37-160			08/15/18	
Chloroethane	15	0.13	0.50	ug/L	10	ND	147	14-230			08/15/18	
Chloroform	66	0.10	0.50	ug/L	10	54	113	51-138			08/15/18	
Chloromethane	18	0.18	0.50	ug/L	10	0.33	179	10-273			08/15/18	
cis-1,2-Dichloroethene	13	0.10	0.50	ug/L	10	ND	127	81-130			08/15/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10	ND	121	10-227			08/15/18	
Dibromochloromethane	27	0.085	0.50	ug/L	10	17	103	53-149			08/15/18	
Dichlorodifluoromethane	13	0.11	1.0	ug/L	10	0.25	127	52-171			08/15/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A811941-MS1), Source: A8H1958-01												
Dichloromethane	13	0.11	0.50	ug/L	10	ND	129	10-221			08/15/18	
Ethylbenzene	11	0.13	0.50	ug/L	10	ND	111	37-162			08/15/18	
Hexachloroethane	13	0.15	1.0	ug/L	10	0.33	123	78-145			08/15/18	
m,p-Xylenes	22	0.22	0.50	ug/L	20	ND	110	83-108			08/15/18	MS1.0 ***High***
Methyl-t-butyl ether	24	0.22	0.50	ug/L	20	ND	121	79-131			08/15/18	
o-Xylene	11	0.12	0.50	ug/L	10	ND	108	81-115			08/15/18	
Styrene	10	0.16	0.50	ug/L	10	ND	104	78-117			08/15/18	
Tetrachloroethene (PCE)	11	0.11	0.50	ug/L	10	ND	106	64-148			08/15/18	
Toluene	11	0.14	0.50	ug/L	10	ND	110	47-150			08/15/18	
trans-1,2-Dichloroethene	14	0.13	0.50	ug/L	10	ND	135	54-156			08/15/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10	ND	102	17-183			08/15/18	
Trichloroethene (TCE)	12	0.13	0.50	ug/L	10	ND	119	71-157			08/15/18	
Trichlorofluoromethane	14	0.12	0.50	ug/L	10	0.23	137	17-181			08/15/18	
Vinyl Chloride	14	0.15	0.50	ug/L	10	0.18	140	10-251			08/15/18	
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*47*				*50*		*94*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*46*				*50*		*91*	*70-130*			08/15/18	
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812091-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	0.50	ug/L							08/23/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	0.50	ug/L							08/23/18	
2,4,6-Trichlorophenol	ND	0.14	0.50	ug/L							08/23/18	
2,4-Dichlorophenol	ND	0.10	0.50	ug/L							08/23/18	
2,4-Dimethylphenol	ND	0.15	0.50	ug/L							08/23/18	
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							08/23/18	
2,4-Dinitrotoluene	ND	0.10	0.50	ug/L							08/23/18	
2,6-Dinitrotoluene	ND	0.36	0.50	ug/L							08/23/18	
2-Chloronaphthalene	ND	0.10	0.50	ug/L							08/23/18	
2-Chlorophenol	ND	0.11	0.50	ug/L							08/23/18	
2-Nitrophenol	ND	0.21	0.50	ug/L							08/23/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L							08/23/18	
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							08/23/18	
4-Bromophenyl phenyl ether	ND	0.10	0.50	ug/L							08/23/18	
4-Chloro-3-methylphenol	ND	0.10	0.50	ug/L							08/23/18	
4-Chlorophenyl phenyl ether	ND	0.23	0.50	ug/L							08/23/18	
4-Nitrophenol	ND	0.26	1.0	ug/L							08/23/18	
Acenaphthene	ND	0.0040	0.010	ug/L							08/23/18	
Acenaphthylene	ND	0.0023	0.010	ug/L							08/23/18	
Anthracene	ND	0.0020	0.010	ug/L							08/23/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812091-BLK1)												
Benzidine	ND	1.4	5.0	ug/L							08/23/18	
Benzo(a)anthracene	ND	0.0023	0.010	ug/L							08/23/18	
Benzo(a)pyrene	ND	0.0033	0.010	ug/L							08/23/18	
Benzo(b)fluoranthene	ND	0.0021	0.010	ug/L							08/23/18	
Benzo(g,h,i)perylene	ND	0.0039	0.010	ug/L							08/23/18	
Benzo(k)fluoranthene	ND	0.0028	0.010	ug/L							08/23/18	
Bis(2-chloroethoxy)methane	ND	0.10	0.50	ug/L							08/23/18	
Bis(2-chloroethyl) ether	ND	0.15	0.50	ug/L							08/23/18	
Bis(2-chloroisopropyl) ether	ND	0.13	0.50	ug/L							08/23/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	1.0	ug/L							08/23/18	
Butyl benzyl phthalate	ND	0.10	0.50	ug/L							08/23/18	
Chrysene	ND	0.0011	0.010	ug/L							08/23/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.010	ug/L							08/23/18	
Diethyl phthalate	ND	0.10	0.50	ug/L							08/23/18	
Dimethyl phthalate	ND	0.10	0.50	ug/L							08/23/18	
Di-n-butyl phthalate	ND	0.14	0.50	ug/L							08/23/18	
Di-n-octyl phthalate	ND	0.11	0.50	ug/L							08/23/18	
Fluoranthene	ND	0.0012	0.010	ug/L							08/23/18	
Fluorene	ND	0.0043	0.010	ug/L							08/23/18	
Hexachlorobenzene	ND	0.15	0.50	ug/L							08/23/18	
Hexachlorobutadiene	ND	0.13	0.50	ug/L							08/23/18	
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L							08/23/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.010	ug/L							08/23/18	
Isophorone	ND	0.11	0.50	ug/L							08/23/18	
Naphthalene	ND	0.0027	0.010	ug/L							08/23/18	
Nitrobenzene	ND	0.11	0.50	ug/L							08/23/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	0.50	ug/L							08/23/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	0.50	ug/L							08/23/18	
N-Nitrosodiphenylamine (as DPA)	ND	0.24	0.50	ug/L							08/23/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							08/23/18	
Phenanthrene	ND	0.0024	0.010	ug/L							08/23/18	
Phenol	ND	0.10	0.50	ug/L							08/23/18	
Pyrene	ND	0.0014	0.010	ug/L							08/23/18	
Surrogate: 2,4,6-Tribromophenol	*6.9*				*5.0*		*138*	*53-200*			08/23/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*80*	*40-127*			08/23/18	
Surrogate: 2-Fluorophenol	*3.7*				*5.0*		*74*	*42-123*			08/23/18	
Surrogate: Nitrobenzene-d5	*3.0*				*5.0*		*60*	*49-133*			08/23/18	
Surrogate: Phenol-d6	*4.7*				*5.0*		*93*	*52-125*			08/23/18	
Surrogate: p-Terphenyl-d14	*4.6*				*5.0*		*91*	*39-135*			08/23/18	
Blank Spike (A812091-BS1)												
1,2,4-Trichlorobenzene	3.0	0.10	0.50	ug/L	5.0		60	44-142			08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.8	0.10	0.50	ug/L	5.0		75	30-130			08/24/18	
2,4,6-Trichlorophenol	4.3	0.14	0.50	ug/L	5.0		85	37-144			08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A812091											Prepared: 8/20/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike (A812091-BS1)													
2,4-Dichlorophenol	3.9	0.10	0.50	ug/L	5.0		77	39-135			08/24/18		
2,4-Dimethylphenol	0.69	0.15	0.50	ug/L	5.0		14	10-175			08/24/18		
2,4-Dinitrophenol	1.7	0.27	1.0	ug/L	5.0		35	10-191			08/24/18		
2,4-Dinitrotoluene	4.6	0.10	0.50	ug/L	5.0		91	39-139			08/24/18		
2,6-Dinitrotoluene	4.5	0.36	0.50	ug/L	5.0		89	50-158			08/24/18		
2-Chloronaphthalene	4.0	0.10	0.50	ug/L	5.0		80	60-118			08/24/18		
2-Chlorophenol	3.7	0.11	0.50	ug/L	5.0		75	23-134			08/24/18		
2-Nitrophenol	2.4	0.21	0.50	ug/L	5.0		47	29-182			08/24/18		
3,3-Dichlorobenzidine	8.9	0.54	2.0	ug/L	20		44	10-200			08/24/18		
4,6-Dinitro-2-methylphenol	0.91	0.11	0.50	ug/L	5.0		18	10-181			08/24/18		
4-Bromophenyl phenyl ether	4.2	0.10	0.50	ug/L	5.0		84	53-127			08/24/18		
4-Chloro-3-methylphenol	3.9	0.10	0.50	ug/L	5.0		78	22-147			08/24/18		
4-Chlorophenyl phenyl ether	4.3	0.23	0.50	ug/L	5.0		85	25-158			08/24/18		
4-Nitrophenol	4.5	0.26	1.0	ug/L	5.0		89	10-132			08/24/18		
Acenaphthene	0.082	0.0040	0.010	ug/L	0.10		82	47-145			08/24/18		
Acenaphthylene	0.069	0.0023	0.010	ug/L	0.10		69	33-145			08/24/18		
Anthracene	0.081	0.0020	0.010	ug/L	0.10		81	27-133			08/24/18		
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			08/24/18	BS	***Low***
Benzo(a)anthracene	0.092	0.0023	0.010	ug/L	0.10		92	33-143			08/24/18		
Benzo(a)pyrene	0.069	0.0033	0.010	ug/L	0.10		69	17-163			08/24/18		
Benzo(g,h,i)perylene	0.089	0.0039	0.010	ug/L	0.10		89	10-200			08/24/18		
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0		87	33-184			08/24/18		
Bis(2-chloroethyl) ether	4.6	0.15	0.50	ug/L	5.0		91	12-158			08/24/18		
Bis(2-chloroisopropyl) ether	4.4	0.13	0.50	ug/L	5.0		89	36-166			08/24/18		
Bis(2-ethylhexyl) phthalate	4.4	0.29	1.0	ug/L	5.0		88	10-158			08/24/18		
Butyl benzyl phthalate	2.9	0.10	0.50	ug/L	5.0		59	10-152			08/24/18		
Chrysene	0.088	0.0011	0.010	ug/L	0.10		88	17-168			08/24/18		
Dibenzo(a,h)anthracene	0.10	0.0031	0.010	ug/L	0.10		101	10-200			08/24/18		
Diethyl phthalate	3.0	0.10	0.50	ug/L	5.0		61	10-114			08/24/18		
Dimethyl phthalate	1.7	0.10	0.50	ug/L	5.0		33	10-112			08/24/18		
Di-n-butyl phthalate	3.7	0.14	0.50	ug/L	5.0		75	10-118			08/24/18		
Di-n-octyl phthalate	4.5	0.11	0.50	ug/L	5.0		89	10-146			08/24/18		
Fluoranthene	0.091	0.0012	0.010	ug/L	0.10		91	26-137			08/24/18		
Fluorene	0.088	0.0043	0.010	ug/L	0.10		88	59-121			08/24/18		
Hexachlorobenzene	4.1	0.15	0.50	ug/L	5.0		82	10-152			08/24/18		
Hexachlorobutadiene	2.6	0.13	0.50	ug/L	5.0		51	24-116			08/24/18		
Hexachlorocyclopentadiene	0.35	0.14	0.50	ug/L	5.0		7	10-130			08/24/18	BS, J	***Low***
Indeno(1,2,3-cd)pyrene	0.087	0.0027	0.010	ug/L	0.10		87	10-171			08/24/18		
Isophorone	4.4	0.11	0.50	ug/L	5.0		88	21-196			08/24/18		
Naphthalene	0.077	0.0027	0.010	ug/L	0.10		77	21-133			08/24/18		
Nitrobenzene	5.4	0.11	0.50	ug/L	5.0		107	35-180			08/24/18		
N-Nitrosodimethylamine (NDMA)	3.3	0.48	0.50	ug/L	5.0		66	10-130			08/24/18		
N-Nitrosodi-n-propylamine (NDPA)	3.6	0.10	0.50	ug/L	5.0		72	10-200			08/24/18		

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A812091-BS1)												
N-Nitrosodiphenylamine (as DPA)	3.6	0.24	0.50	ug/L	5.0		72	10-130			08/24/18	
Pentachlorophenol	4.2	0.20	1.0	ug/L	5.0		83	14-176			08/24/18	
Phenanthrene	0.086	0.0024	0.010	ug/L	0.10		86	54-120			08/24/18	
Phenol	4.0	0.10	0.50	ug/L	5.0		79	10-112			08/24/18	
Pyrene	0.087	0.0014	0.010	ug/L	0.10		87	52-115			08/24/18	
Surrogate: 2,4,6-Tribromophenol	*8.0*				*5.0*		*159*	*53-200*			08/24/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*81*	*40-127*			08/24/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*81*	*42-123*			08/24/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*87*	*49-133*			08/24/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*89*	*52-125*			08/24/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*89*	*39-135*			08/24/18	
Blank Spike Dup (A812091-BSD1)												
1,2,4-Trichlorobenzene	3.2	0.10	0.50	ug/L	5.0		63	44-142	6	30	08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	2.5	0.10	0.50	ug/L	5.0		50	30-130	40	30	08/24/18	BS3.0
2,4,6-Trichlorophenol	4.4	0.14	0.50	ug/L	5.0		87	37-144	2	30	08/24/18	
2,4-Dichlorophenol	4.1	0.10	0.50	ug/L	5.0		81	39-135	5	30	08/24/18	
2,4-Dimethylphenol	1.2	0.15	0.50	ug/L	5.0		24	10-175	53	30	08/24/18	BS3.0
2,4-Dinitrophenol	ND	0.27	1.0	ug/L	5.0		0	10-191		30	08/24/18	BS ***Low***
2,4-Dinitrotoluene	4.5	0.10	0.50	ug/L	5.0		90	39-139	2	30	08/24/18	
2,6-Dinitrotoluene	4.3	0.36	0.50	ug/L	5.0		86	50-158	3	30	08/24/18	
2-Chloronaphthalene	4.0	0.10	0.50	ug/L	5.0		81	60-118	1	30	08/24/18	
2-Chlorophenol	3.8	0.11	0.50	ug/L	5.0		76	23-134	2	30	08/24/18	
2-Nitrophenol	0.49	0.21	0.50	ug/L	5.0		10	29-182	131	30	08/24/18	BS, BS4.0, J ***Low***
3,3-Dichlorobenzidine	5.5	0.54	2.0	ug/L	20		27	10-200	47	30	08/24/18	BS3.0
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L	5.0		0	10-181		30	08/24/18	BS ***Low***
4-Bromophenyl phenyl ether	4.2	0.10	0.50	ug/L	5.0		84	53-127	1	30	08/24/18	
4-Chloro-3-methylphenol	4.2	0.10	0.50	ug/L	5.0		83	22-147	6	30	08/24/18	
4-Chlorophenyl phenyl ether	4.2	0.23	0.50	ug/L	5.0		84	25-158	1	30	08/24/18	
4-Nitrophenol	4.4	0.26	1.0	ug/L	5.0		89	10-132	1	30	08/24/18	
Acenaphthene	0.078	0.0040	0.010	ug/L	0.10		78	47-145	5	30	08/24/18	
Acenaphthylene	0.064	0.0023	0.010	ug/L	0.10		64	33-145	8	30	08/24/18	
Anthracene	0.074	0.0020	0.010	ug/L	0.10		74	27-133	9	30	08/24/18	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	08/24/18	BS ***Low***
Benzo(a)anthracene	0.088	0.0023	0.010	ug/L	0.10		88	33-143	4	30	08/24/18	
Benzo(a)pyrene	0.071	0.0033	0.010	ug/L	0.10		71	17-163	3	30	08/24/18	
Benzo(g,h,i)perylene	0.090	0.0039	0.010	ug/L	0.10		90	10-200	1	30	08/24/18	
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0		88	33-184	0	30	08/24/18	
Bis(2-chloroethyl) ether	4.4	0.15	0.50	ug/L	5.0		89	12-158	3	30	08/24/18	
Bis(2-chloroisopropyl) ether	4.3	0.13	0.50	ug/L	5.0		86	36-166	3	30	08/24/18	
Bis(2-ethylhexyl) phthalate	4.4	0.29	1.0	ug/L	5.0		88	10-158	0	30	08/24/18	
Butyl benzyl phthalate	3.1	0.10	0.50	ug/L	5.0		61	10-152	4	30	08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A812091-BSD1)												
Chrysene	0.086	0.0011	0.010	ug/L	0.10		86	17-168	2	30	08/24/18	
Dibenzo(a,h)anthracene	0.10	0.0031	0.010	ug/L	0.10		101	10-200	1	30	08/24/18	
Diethyl phthalate	3.1	0.10	0.50	ug/L	5.0		62	10-114	1	30	08/24/18	
Dimethyl phthalate	1.8	0.10	0.50	ug/L	5.0		36	10-112	8	30	08/24/18	
Di-n-butyl phthalate	3.8	0.14	0.50	ug/L	5.0		76	10-118	2	30	08/24/18	
Di-n-octyl phthalate	4.4	0.11	0.50	ug/L	5.0		89	10-146	1	30	08/24/18	
Fluoranthene	0.092	0.0012	0.010	ug/L	0.10		92	26-137	1	30	08/24/18	
Fluorene	0.087	0.0043	0.010	ug/L	0.10		87	59-121	1	30	08/24/18	
Hexachlorobenzene	4.2	0.15	0.50	ug/L	5.0		84	10-152	3	30	08/24/18	
Hexachlorobutadiene	2.7	0.13	0.50	ug/L	5.0		55	24-116	7	30	08/24/18	
Hexachlorocyclopentadiene	0.38	0.14	0.50	ug/L	5.0		8	10-130	8	30	08/24/18	BS, J ***Low***
Indeno(1,2,3-cd)pyrene	0.087	0.0027	0.010	ug/L	0.10		87	10-171	0	30	08/24/18	
Isophorone	4.3	0.11	0.50	ug/L	5.0		87	21-196	1	30	08/24/18	
Naphthalene	0.079	0.0027	0.010	ug/L	0.10		79	21-133	2	30	08/24/18	
Nitrobenzene	5.3	0.11	0.50	ug/L	5.0		105	35-180	2	30	08/24/18	
N-Nitrosodimethylamine (NDMA)	3.2	0.48	0.50	ug/L	5.0		63	10-130	5	30	08/24/18	
N-Nitrosodi-n-propylamine (NDPA)	3.5	0.10	0.50	ug/L	5.0		71	10-200	2	30	08/24/18	
N-Nitrosodiphenylamine (as DPA)	3.4	0.24	0.50	ug/L	5.0		68	10-130	6	30	08/24/18	
Pentachlorophenol	4.2	0.20	1.0	ug/L	5.0		85	14-176	2	30	08/24/18	
Phenanthrene	0.085	0.0024	0.010	ug/L	0.10		85	54-120	1	30	08/24/18	
Phenol	4.1	0.10	0.50	ug/L	5.0		82	10-112	3	30	08/24/18	
Pyrene	0.088	0.0014	0.010	ug/L	0.10		88	52-115	1	30	08/24/18	
Surrogate: 2,4,6-Tribromophenol	*8.3*				*5.0*		*167*	*53-200*			08/24/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*79*	*40-127*			08/24/18	
Surrogate: 2-Fluorophenol	*3.6*				*5.0*		*72*	*42-123*			08/24/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*87*	*49-133*			08/24/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*88*	*52-125*			08/24/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*89*	*39-135*			08/24/18	
Matrix Spike (A812091-MS1), Source: A8H1767-01												
1,2,4-Trichlorobenzene	3.0	0.10	0.50	ug/L	4.9	ND	61	44-142			08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.8	0.10	0.50	ug/L	4.9	ND	77	30-130			08/24/18	
2,4,6-Trichlorophenol	4.5	0.14	0.50	ug/L	4.9	ND	93	37-144			08/24/18	
2,4-Dichlorophenol	4.1	0.10	0.50	ug/L	4.9	ND	84	39-135			08/24/18	
2,4-Dimethylphenol	1.4	0.15	0.50	ug/L	4.9	ND	28	32-119			08/24/18	MS1.0 ***Low***
2,4-Dinitrophenol	4.9	0.27	1.0	ug/L	4.9	ND	100	10-191			08/24/18	
2,4-Dinitrotoluene	4.7	0.10	0.50	ug/L	4.9	ND	96	39-139			08/24/18	
2,6-Dinitrotoluene	4.7	0.36	0.50	ug/L	4.9	ND	97	50-158			08/24/18	
2-Chloronaphthalene	3.8	0.10	0.50	ug/L	4.9	ND	78	60-118			08/24/18	
2-Chlorophenol	3.8	0.11	0.50	ug/L	4.9	ND	77	23-134			08/24/18	
2-Nitrophenol	3.8	0.21	0.50	ug/L	4.9	ND	78	29-182			08/24/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L	20	ND	0	10-200			08/24/18	MS1.0 ***Low***
4,6-Dinitro-2-methylphenol	4.1	0.11	0.50	ug/L	4.9	ND	83	10-181			08/24/18	
4-Bromophenyl phenyl ether	4.1	0.10	0.50	ug/L	4.9	ND	84	53-127			08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A812091-MS1), Source: A8H1767-01												
4-Chloro-3-methylphenol	4.3	0.10	0.50	ug/L	4.9	ND	89	22-147			08/24/18	
4-Chlorophenyl phenyl ether	4.1	0.23	0.50	ug/L	4.9	ND	84	25-158			08/24/18	
4-Nitrophenol	4.8	0.26	1.0	ug/L	4.9	ND	99	10-132			08/24/18	
Acenaphthene	0.082	0.0040	0.010	ug/L	0.098	ND	84	47-145			08/24/18	
Acenaphthylene	0.068	0.0023	0.010	ug/L	0.098	ND	70	33-145			08/24/18	
Anthracene	0.068	0.0020	0.010	ug/L	0.098	ND	70	27-133			08/24/18	
Benzidine	ND	1.4	5.0	ug/L	20	ND	0	10-200			08/24/18	MS1.0 ***Low***
Benzo(a)anthracene	0.077	0.0023	0.010	ug/L	0.098	ND	79	33-143			08/24/18	
Benzo(a)pyrene	0.066	0.0033	0.010	ug/L	0.098	ND	68	17-163			08/24/18	
Benzo(g,h,i)perylene	0.031	0.0039	0.010	ug/L	0.098	ND	31	10-200			08/24/18	
Bis(2-chloroethoxy)methane	4.3	0.10	0.50	ug/L	4.9	ND	88	33-184			08/24/18	
Bis(2-chloroethyl) ether	4.3	0.15	0.50	ug/L	4.9	ND	87	12-158			08/24/18	
Bis(2-chloroisopropyl) ether	4.2	0.13	0.50	ug/L	4.9	ND	86	36-166			08/24/18	
Bis(2-ethylhexyl) phthalate	4.3	0.29	1.0	ug/L	4.9	ND	88	10-158			08/24/18	
Butyl benzyl phthalate	3.3	0.10	0.50	ug/L	4.9	ND	68	10-152			08/24/18	
Chrysene	0.082	0.0011	0.010	ug/L	0.098	ND	84	17-168			08/24/18	
Dibenzo(a,h)anthracene	0.045	0.0031	0.010	ug/L	0.098	ND	46	10-200			08/24/18	
Diethyl phthalate	3.5	0.10	0.50	ug/L	4.9	ND	72	10-114			08/24/18	
Dimethyl phthalate	2.3	0.10	0.50	ug/L	4.9	ND	46	10-112			08/24/18	
Di-n-butyl phthalate	3.8	0.14	0.50	ug/L	4.9	ND	79	10-118			08/24/18	
Di-n-octyl phthalate	4.3	0.11	0.50	ug/L	4.9	ND	89	10-146			08/24/18	
Fluoranthene	0.093	0.0012	0.010	ug/L	0.098	ND	96	26-137			08/24/18	
Fluorene	0.089	0.0043	0.010	ug/L	0.098	ND	91	59-121			08/24/18	
Hexachlorobenzene	4.1	0.15	0.50	ug/L	4.9	ND	83	10-152			08/24/18	
Hexachlorobutadiene	2.8	0.13	0.50	ug/L	4.9	ND	58	24-116			08/24/18	
Hexachlorocyclopentadiene	0.41	0.14	0.50	ug/L	4.9	ND	8	10-130			08/24/18	MS1.0 ***Low*** , J
Indeno(1,2,3-cd)pyrene	0.038	0.0027	0.010	ug/L	0.098	ND	39	10-171			08/24/18	
Isophorone	4.3	0.11	0.50	ug/L	4.9	ND	89	21-196			08/24/18	
Naphthalene	0.12	0.0027	0.010	ug/L	0.098	ND	124	21-133			08/24/18	
Nitrobenzene	5.0	0.11	0.50	ug/L	4.9	ND	103	35-180			08/24/18	
N-Nitrosodimethylamine (NDMA)	3.0	0.48	0.50	ug/L	4.9	ND	62	10-130			08/24/18	
N-Nitrosodi-n-propylamine (NDPA)	3.8	0.10	0.50	ug/L	4.9	ND	77	10-200			08/24/18	
N-Nitrosodiphenylamine (as DPA)	3.6	0.24	0.50	ug/L	4.9	ND	73	10-130			08/24/18	
Pentachlorophenol	5.5	0.20	1.0	ug/L	4.9	ND	113	14-176			08/24/18	
Phenanthrene	0.088	0.0024	0.010	ug/L	0.098	ND	90	54-120			08/24/18	
Phenol	4.1	0.10	0.50	ug/L	4.9	ND	84	10-112			08/24/18	
Pyrene	0.095	0.0014	0.010	ug/L	0.098	ND	97	52-115			08/24/18	
Surrogate: 2,4,6-Tribromophenol	*9.5*				*4.9*		*194*	*53-200*			08/24/18	
Surrogate: 2-Fluorobiphenyl	*3.8*				*4.9*		*78*	*40-127*			08/24/18	
Surrogate: 2-Fluorophenol	*3.9*				*4.9*		*80*	*42-123*			08/24/18	
Surrogate: Nitrobenzene-d5	*4.2*				*4.9*		*86*	*49-133*			08/24/18	
Surrogate: Phenol-d6	*4.3*				*4.9*		*89*	*52-125*			08/24/18	
Surrogate: p-Terphenyl-d14	*4.5*				*4.9*		*91*	*39-135*			08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A812091											Prepared: 8/20/2018		
Prep Method: EPA 3520C											Analyst: YNV		
EPA 625 - Quality Control													
Batch: A812604											Prepared: 8/27/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank (A812604-BLK1)													
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							08/31/18		
2-Nitrophenol	ND	0.21	0.50	ug/L							08/31/18		
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							08/31/18		
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L							08/31/18		
Nitrobenzene	ND	0.11	0.50	ug/L							08/31/18		
Surrogate: 2,4,6-Tribromophenol	*6.7*				*5.0*		*134*	*53-200*			08/31/18		
Surrogate: 2-Fluorobiphenyl	*4.4*				*5.0*		*87*	*40-127*			08/31/18		
Surrogate: 2-Fluorophenol	*3.6*				*5.0*		*72*	*42-123*			08/31/18		
Surrogate: Nitrobenzene-d5	*3.6*				*5.0*		*73*	*49-133*			08/31/18		
Surrogate: Phenol-d6	*4.8*				*5.0*		*95*	*52-125*			08/31/18		
Surrogate: p-Terphenyl-d14	*4.8*				*5.0*		*96*	*39-135*			08/31/18		
Blank Spike (A812604-BS1)													
2,4-Dinitrophenol	2.7	0.27	1.0	ug/L	5.0		53	10-191			08/31/18		
2-Nitrophenol	3.6	0.21	0.50	ug/L	5.0		72	29-182			08/31/18		
4,6-Dinitro-2-methylphenol	1.8	0.11	0.50	ug/L	5.0		35	10-181			08/31/18		
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L	5.0		0	10-130			08/31/18		***Low***
Nitrobenzene	4.7	0.11	0.50	ug/L	5.0		93	35-180			08/31/18		
Surrogate: 2,4,6-Tribromophenol	*7.2*				*5.0*		*144*	*53-200*			08/31/18		
Surrogate: 2-Fluorobiphenyl	*4.5*				*5.0*		*90*	*40-127*			08/31/18		
Surrogate: 2-Fluorophenol	*3.5*				*5.0*		*69*	*42-123*			08/31/18		
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*89*	*49-133*			08/31/18		
Surrogate: Phenol-d6	*4.5*				*5.0*		*89*	*52-125*			08/31/18		
Surrogate: p-Terphenyl-d14	*4.7*				*5.0*		*94*	*39-135*			08/31/18		
Blank Spike Dup (A812604-BSD1)													
2,4-Dinitrophenol	3.1	0.27	1.0	ug/L	5.0		61	10-191	14	30	08/31/18		
2-Nitrophenol	3.9	0.21	0.50	ug/L	5.0		77	29-182	7	30	08/31/18		
4,6-Dinitro-2-methylphenol	2.1	0.11	0.50	ug/L	5.0		43	10-181	20	30	08/31/18		
Hexachlorocyclopentadiene	0.15	0.14	0.50	ug/L	5.0		3	10-130	13	30	08/31/18	J	***Low***
Nitrobenzene	5.8	0.11	0.50	ug/L	5.0		115	35-180	21	30	08/31/18		
Surrogate: 2,4,6-Tribromophenol	*7.2*				*5.0*		*145*	*53-200*			08/31/18		
Surrogate: 2-Fluorobiphenyl	*4.4*				*5.0*		*89*	*40-127*			08/31/18		
Surrogate: 2-Fluorophenol	*3.5*				*5.0*		*70*	*42-123*			08/31/18		
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*89*	*49-133*			08/31/18		
Surrogate: Phenol-d6	*4.4*				*5.0*		*87*	*52-125*			08/31/18		
Surrogate: p-Terphenyl-d14	*4.5*				*5.0*		*90*	*39-135*			08/31/18		
Matrix Spike (A812604-MS1), Source: A8H1776-01RE1													
2,4-Dinitrophenol	7.9	2.7	10	ug/L	4.8	ND	163	10-191			08/31/18	J	
2-Nitrophenol	4.2	2.1	5.0	ug/L	4.8	ND	87	29-182			08/31/18	J	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812604											Prepared: 8/27/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A812604-MS1), Source: A8H1776-01RE1												
4,6-Dinitro-2-methylphenol	5.4	1.1	5.0	ug/L	4.8	ND	113	10-181			08/31/18	
Hexachlorocyclopentadiene	ND	1.4	5.0	ug/L	4.8	ND	0	10-130			08/31/18	MS1.0 ***Low***
Nitrobenzene	3.5	1.1	5.0	ug/L	4.8	ND	72	35-180			08/31/18	J
Surrogate: 2,4,6-Tribromophenol	*4.9*				*4.8*		*102*	*53-200*			08/31/18	
Surrogate: 2-Fluorobiphenyl	*3.7*				*4.8*		*77*	*40-127*			08/31/18	
Surrogate: 2-Fluorophenol	*3.0*				*4.8*		*62*	*42-123*			08/31/18	
Surrogate: Nitrobenzene-d5	*4.4*				*4.8*		*92*	*49-133*			08/31/18	
Surrogate: Phenol-d6	*4.0*				*4.8*		*82*	*52-125*			08/31/18	
Surrogate: p-Terphenyl-d14	*3.5*				*4.8*		*72*	*39-135*			08/31/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435				

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-003	State of California - ELAP	2993
State of Oregon - NELAP	4119-003				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-17

A8H1767

08142018

Abalo1080

Turnaround: Standard
Due Date: 8/28/2018

Abalone Coast Analytical, Inc.

Printed: 8/14/2018 6:01:42PM

2.4 #CT3

A8H1767
Abalo1080

08/14/2018
10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

Rush: 24 Hr | 48 Hr

Lab Reference # 18-5135-2

Client Full Name/ Business:	Address	City	State	Zip
City of Pismo Beach				
Bill To: **Same**				

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name: Hallie Flit / Hallie Flit

Project:	**R/O Brine Analysis**
Contact Full Name:	**Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	08/13/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	**AQ**	21 24	3x p/unp half gal, 2a p/unp 1 liter	-6 -1
	1000	EPA 625, EPA, 608, EPA 624, TCDD Equivalents		1 1 on	6x Ag/unp, 3x p/HNO3 1 liter	
		Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
		2, ~~3~~ or Species Chronic Tox: Urchin, Kelp, Topsmelt			1x p/unp 5 gal	
R/O Feed Water	08/13/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	**AQ**	15	p/unp half gal, p/unp 1 liter	-2
	1020	EPA 625, EPA, 608, EPA 624, TCDD Equivalents Cl2*			6x Ag/unp, 3x p/HNO3 1 liter	
					3x VV/HCl, 1x VV/unp	

Relinquished By: Hallie Flit	Received By: Amanda Miller	Received By:	Lab:
Date/Time: 1045 08/13/18	Date/Time: 8/13/18 1115	Date/Time: 8/14/18 1357	
Lab:	Lab:	Lab:	Lab:

Method Of Shipment:
Client ✓
Courier
Other:

Condition
Intact (y/n) y
Sediment w
Temp. 22°C
On Ice (Yes) No

Lab use only
Sent to:
State Forms sent:

Remarks: *Urchin or kelp TBD

ShareFile: ☐

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

GGO B1 BW FOAM

*add Cl_2 as per Caitlin Galloway 8/14/18 MKK

A8H1767 08/14/2018
Abalo1080 10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No (NA)	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	Yes No (NA) Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	(Yes) No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: MICHELLE By/Time: 1455	(Yes) No NA

Bottles Received (If "N" means preservation/chlorine checks are either N/A or are performed in the lab)

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?					
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap -AG*	—	—	1C,1A*				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ DW	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ WW	pH 9.3-9.7	P F			8141B		
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ 7199 ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F					
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	3C				
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C				
HCl (AG) Lt. Blue Label O&G, Diesel, TCP	—	—	1V				
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—					
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other:							
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Solids: Brass / Steel / Plastic Bag	—	—					

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

Received Broken:
2-HCL-AG
1-NONE-CG } VOAs

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: LA @ 1752 Labels checked by: JWD @ 1911 RUSH Paged by: _____ @ _____

External

A8H1767

MKK

CERES Analytical Laboratory, Inc.
4919 Windplay Dr Suite 1, El Dorado Hills, CA 95762

August 24, 2018

Ceres ID: 12296

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the one waste water sample received on August 17, 2018. This sample was analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8H1767.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12296-001	R/O Feed Water A8H1767-01	8/17/2018	8/13/2018 10:20

Section II: Data Summary

EPA Method 1613B

Quality Assurance Sample Method Blank		Date Received: NA
	QC Batch #: 1845	Date Extracted: 8/22/2018
	Matrix: Waste Water	ZB-5MS Analysis: 8/23/2018
Project ID: A8H1767	Sample Size: 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 2.83	0.887	5.00	
12378-PeCDD	DL= 3.52	2.56	25.0	
123478-HxCDD	DL= 6.49	3.08	25.0	
123678-HxCDD	DL= 7.16	5.29	25.0	
123789-HxCDD	DL= 6.68	13.1	25.0	
1234678-HpCDD	DL= 7.70	5.15	25.0	
OCDD	DL= 16.8	8.50	50.0	
2,3,7,8-TCDF	DL= 3.61	0.733	5.00	
12378-PeCDF	DL= 6.06	2.96	25.0	
23478-PeCDF	DL= 5.76	5.40	25.0	
123478-HxCDF	DL= 6.01	3.93	25.0	
123678-HxCDF	DL= 5.46	2.94	25.0	
234678-HxCDF	DL= 6.17	4.32	25.0	
123789-HxCDF	DL= 8.31	4.70	25.0	
1234678-HpCDF	DL= 6.49	4.24	25.0	
1234789-HpCDF	DL= 8.73	5.74	25.0	
OCDF	DL= 13.2	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 2.83	
Total PeCDD	DL= 3.52	
Total HxCDD	DL= 7.16	
Total HpCDD	DL= 7.70	
Total TCDF	DL= 3.61	
Total PeCDF	DL= 6.06	
Total HxCDF	DL= 8.31	
Total HpCDF	DL= 8.73	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	107	25-164	
13C-12378-PeCDD	86.4	25-181	
13C-123478-HxCDD	86.5	32-141	
13C-123678-HxCDD	91.2	28-130	
13C-1234678-HpCDD	77.1	23-140	
13C-OCDD	49.9	17-157	
13C-2378-TCDF	90.3	24-169	
13C-12378-PeCDF	72.0	24-185	
13C-23478-PeCDF	68.6	21-178	
13C-123478-HxCDF	87.6	26-152	
13C-123678-HxCDF	95.6	26-123	
13C-234678-HxCDF	79.6	28-136	
13C-123789-HxCDF	72.0	29-147	
13C-1234678-HpCDF	63.0	28-143	
13C-1234789-HpCDF	57.6	26-138	

CRS

37Cl4-2378-TCDD	83.5	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery		Date Received: NA
	QC Batch #: 1845	Date Extracted: 8/22/2018
	Matrix: Waste Water	ZB-5MS Analysis: 8/23/2018
Project ID: A8H1767	Sample Size: 1.000 L	

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	9.26	6.7-15.8	13C-2378-TCDD	102	20-175
12378-PeCDD	46.5	35-71	13C-12378-PeCDD	76.7	21-227
123478-HxCDD	47.1	35-82	13C-123478-HxCDD	86.0	21-193
123678-HxCDD	50.1	38-67	13C-123678-HxCDD	86.5	25-163
123789-HxCDD	52.1	32-81	13C-1234678-HpCDD	71.6	26-166
1234678-HpCDD	46.5	35-70	13C-OCDD	50.6	13-198
OCDD	97.8	78-144	13C-2378-TCDF	82.2	22-152
2,3,7,8-TCDF	8.68	7.5-15.8	13C-12378-PeCDF	69.0	21-192
12378-PeCDF	43.9	40-67	13C-23478-PeCDF	70.7	13-328
23478-PeCDF	41.2	34-80	13C-123478-HxCDF	80.5	19-202
123478-HxCDF	45.5	36-67	13C-123678-HxCDF	87.2	21-159
123678-HxCDF	43.4	42-65	13C-234678-HxCDF	76.4	22-176
234678-HxCDF	42.3	35-78	13C-123789-HxCDF	71.3	17-205
123789-HxCDF	43.7	39-65	13C-1234678-HpCDF	60.3	21-158
1234678-HpCDF	42.9	41-61	13C-1234789-HpCDF	52.7	20-186
1234789-HpCDF	42.0	39-69			
OCDF	73.1	63-170			
			CRS		
			37Cl4-2378-TCDD	91.1	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Client Sample ID: R/O Feed Water A8H1767-01		
Project ID: A8H1767	**Ceres Sample ID:** 12296-001	**Date Received:** 8/17/2018
	QC Batch #: 1845	**Date Extracted:** 8/22/2018
Date Collected: 8/13/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/24/2018
Time Collected: 10:20	**Sample Size:** 1.018 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 4.32	0.887	4.91		13C-2378-TCDD	66.3	25-164	
12378-PeCDD	DL= 7.12	2.56	24.6		13C-12378-PeCDD	50.7	25-181	
123478-HxCDD	DL= 9.28	3.08	24.6		13C-123478-HxCDD	50.0	32-141	
123678-HxCDD	DL= 9.93	5.29	24.6		13C-123678-HxCDD	51.1	28-130	
123789-HxCDD	DL= 9.40	13.1	24.6		13C-1234678-HpCDD	46.3	23-140	
1234678-HpCDD	DL= 6.46	5.15	24.6		13C-OCDD	28.4	17-157	
OCDD	DL= 12.5	8.50	49.1		13C-2378-TCDF	62.6	24-169	
2,3,7,8-TCDF	DL= 2.93	0.733	4.91		13C-12378-PeCDF	46.6	24-185	
12378-PeCDF	DL= 5.40	2.96	24.6		13C-23478-PeCDF	47.1	21-178	
23478-PeCDF	DL= 5.14	5.40	24.6		13C-123478-HxCDF	52.7	26-152	
123478-HxCDF	DL= 5.14	3.93	24.6		13C-123678-HxCDF	53.1	26-123	
123678-HxCDF	DL= 5.19	2.94	24.6		13C-234678-HxCDF	53.2	28-136	
234678-HxCDF	DL= 4.75	4.32	24.6		13C-123789-HxCDF	42.3	29-147	
123789-HxCDF	DL= 7.08	4.70	24.6		13C-1234678-HpCDF	36.9	28-143	
1234678-HpCDF	DL= 7.77	4.24	24.6		13C-1234789-HpCDF	39.7	26-138	
1234789-HpCDF	DL= 8.58	5.74	24.6					
OCDF	DL= 14.0	11.7	49.1					

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.32	
Total PeCDD	DL= 7.12	
Total HxCDD	DL= 9.93	
Total HpCDD	DL= 6.46	
Total TCDF	DL= 2.93	
Total PeCDF	DL= 5.40	
Total HxCDF	DL= 7.08	
Total HpCDF	DL= 8.58	

CRS			
37Cl4-2378-TCDD	114	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

ASSOCIATES

SUBCONTRACT ORDER

A8H1767

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc		Sample Date
A8H1767-01	R/O Feed Water	Client Matrix Water	08/13/2018 10:20

Lab Matrix: Water

F

Analysis: 1 C AG none
EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners

Released By	Date	Received By	Date
[signature]	8/16/18	[signature]	8/17/18 11:10
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: JA (initials)

Ceres ID: 12296		Date/Time: 8/17/18 11:10
Client Project ID: A8H1767		Received Temp: 2-8 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?		(Y) / N
Chain of Custody Received by signed?		(Y) / N
Custody Seals?	Present?	Y / N
	Intact?	Y / N
	NA:	(NA)
Unlabeled / Illegible Samples		Y / (N)
Proper Containers:		(Y) / N
Preservation Acceptable (Chemical or Temperature)?		(Y) / N
Drinking Water, Sodium Thiosulfate present?		Y / (N) / NA
Residual Cl?		Y / (N)
Aqueous sample pH: 6.5		

List COC discrepancies:

JA 8/17/18

List Damaged Samples:

JA 8/17/18

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: August 30, 2018

Work Order Number: A8H1767

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8H1767-01 R/O Feed Water	08/13/18 (10:20)	Water	900.0 901.1	Gross Beta K-40	19.18 ND	± ±	1.70 89	1.86 279

Analyses Date: August 29-30, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	328.76 pCi	311.12 pCi	94.63	5.37	A
Gamma (Cs-137)	786.26 pCi	753.92 pCi	95.88	4.12	A

Flag:

A = result accepted, Bias ≤ 20%
N = result not acceptable, Bias > 20%

Patricia Davi
Patricia Davi
QA/QC Manager
Davi Laboratories

2508-3P

ASSOCIATES

SUBCONTRACT ORDER

A8H1767

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Davi Laboratories
730 Alfred Nobel Drive
Hercules, CA 94547-1805
Phone :(510) 724-9450
Fax: -
Turnaround (Days): Standard
QC Deliverables: I II III IV

Sample ID	Samp Desc		Sample Date
A8H1767-01	R/O Feed Water	Client Matrix Water	08/13/2018 10:20

3P

Lab Matrix: Water

Analysis: 1 L P HNO3

EXT-Gross Beta

EXT-Miscellaneous 1/25 NONE — Potassium-40 via EPA 901.1

Released By	Date	Received By	Date
	8-16-18	Angela Davi	8/17/18 13:15
Released By	Date	Received By	Date

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8H1776
9/20/2018
Invoice: A827616

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8H1776 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 8/14/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Michelle Kawaguchi

Michelle Kawaguchi, Project Manager

NELAP ACCREDITED TNI LABORATORY

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-5135-1 City of Pismo Beach	**Project PO#:**	-
Received:	8/14/2018 - 11:15		
Report Due:	8/28/2018		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt ºC: 2.5

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Detailed Narrative

Analysis Comment

Date: 08/22/2018
Initials: JMS
Comment: The Residual Chlorine analysis was initially preformed by method SM 4500-CL B within hold time but the results were suspect by the laboratory. Residual Chlorine analysis was preformed again using the same method and confirmed the results. The results were still suspected as inaccurate due to a matrix interference, possibly high concentration of an oxidizing agent. The sample was re-analyzed out of hold time using theSM 4500-CL G Method and the results were significantly lower (reported as Chlorine, Colormetric). There may still be a degree of interference due to the color of the sample in the result for the Chlorine, Colormetric analysis.

Chain of Custody Notes

Date: 9/20/18
Initials: MKK
Note: BOD and TSS were added as per client request.

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Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
B2.1	Analyte detected in associated method blank below the reporting limit. No material impact on reported result as sample is ND for this parameter.
BS	Blank spike recoveries did not meet acceptance limits.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
BS4.0	BS/BSD RPD exceeded the method acceptance limit as one of the blank spikes recovered outside limits.
CV0.0	CCV recovery was above method acceptance limits; no material impact on reported result as sample is ND for this parameter.
HT.x	Sample was originally extracted within hold time but this analyte failed low on the Blank Spike. Sample was re-extracted out of hold time with Blank Spike recoveries within limits for this analyte.
HT1.3	Holding time exceeded. Sample was analyzed past the holding time.
HT1.4	Initial analysis was performed within the holding time. However, a required dilution/re-extraction was performed past the holding time.
J	Estimated value
MS1.0	Matrix spike recoveries exceed control limits.
SR1.0	Surrogate recovery exceeds upper control limit. No material impact as associated analytes are Non-Detect.
X	See case narrative.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

Certificate of Analysis

Sample ID: A8H1776-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/13/18 - 10:00
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Biochemical Oxygen Demand	SM 5210B	**2.0**		1.0	mg/L	1	A812811	08/29/18 23:11	09/03/18	HT1.4
Chlorine, Free	SM 4500-Cl G	ND		0.10	mg/L	1	A812153	08/20/18 16:51	08/20/18	HT1.3, X
Chlorine, Total	SM 4500-Cl G	**0.12**		0.10	mg/L	1	A812153	08/20/18 16:51	08/20/18	HT1.3, X
Chlorine, Residual (1)	SM 4500-Cl B	**61**		0.10	mg/L	1	A811902	08/15/18 17:16	08/15/18	X
Total Suspended Solids	SM 2540D	**38**		5.0	mg/L	1	A812290	08/22/18	08/27/18	HT1.4

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**9.6**		0.50	ug/L	5	A811874	08/15/18	08/17/18	
Copper	EPA 200.8 DRC	**13**		3.3	ug/L	3	A811874	08/15/18	08/16/18	
Nickel	EPA 200.8 DRC	**21**		3.0	ug/L	3	A811874	08/15/18	08/16/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD										
4,4'-DDD	EPA 608	ND	0.00072	0.050	ug/L	1	A812088	08/20/18	08/22/18	
4,4'-DDE	EPA 608	ND	0.00061	0.050	ug/L	1	A812088	08/20/18	08/22/18	
4,4'-DDT	EPA 608	ND	0.00070	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Aldrin	EPA 608	ND	0.00079	0.0050	ug/L	1	A812088	08/20/18	08/22/18	
alpha-BHC	EPA 608	ND	0.0025	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1016	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1221	EPA 608	ND	0.063	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1232	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1242	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1248	EPA 608	ND	0.020	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1254	EPA 608	ND	0.050	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Aroclor-1260	EPA 608	ND	0.015	0.50	ug/L	1	A812088	08/20/18	08/22/18	
beta-BHC	EPA 608	ND	0.00054	0.0050	ug/L	1	A812088	08/20/18	08/22/18	
Chlordane	EPA 608	ND	0.026	0.10	ug/L	1	A812088	08/20/18	08/22/18	
delta-BHC	EPA 608	ND	0.012	0.10	ug/L	20	A812088	08/20/18	08/23/18	
Dieldrin	EPA 608	ND	0.00097	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Endosulfan I	EPA 608	ND	0.00089	0.020	ug/L	1	A812088	08/20/18	08/22/18	
Endosulfan II	EPA 608	ND	0.0018	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Endosulfan Sulfate	EPA 608	ND	0.00074	0.050	ug/L	1	A812088	08/20/18	08/22/18	
Endrin	EPA 608	ND	0.00081	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Endrin Aldehyde	EPA 608	ND	0.00067	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Heptachlor	EPA 608	ND	0.00069	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Heptachlor Epoxide	EPA 608	ND	0.00069	0.010	ug/L	1	A812088	08/20/18	08/22/18	
Lindane	EPA 608	ND	0.050	0.10	ug/L	20	A812088	08/20/18	08/23/18	
Toxaphene	EPA 608	ND	0.035	0.50	ug/L	1	A812088	08/20/18	08/22/18	
Surrogate: TCMX	EPA 608	100 %		*Acceptable range: 26-144 %*						

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Certificate of Analysis

Sample ID: A8H1776-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/13/18 - 10:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	**1.2**		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A811941	08/15/18	08/15/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A811941	08/15/18	08/15/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A811941	08/15/18	08/15/18	
Acetone	EPA 624	**5.8**	1.4	20	ug/L	1	A811941	08/15/18	08/15/18	J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Bromodichloromethane	EPA 624	**1.2**	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Bromomethane	EPA 624	**0.31**	0.19	1.0	ug/L	1	A811941	08/15/18	08/15/18	J, B2.1, CV0.0
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A811941	08/15/18	08/15/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chloroform	EPA 624	**5.0**	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Chloromethane	EPA 624	**0.97**	0.18	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A811941	08/15/18	08/15/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Dibromochloromethane	EPA 624	**0.22**	0.085	0.50	ug/L	1	A811941	08/15/18	08/15/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A811941	08/15/18	08/15/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Ethylbenzene	EPA 624	**0.17**	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	J
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A811941	08/15/18	08/15/18	
m,p-Xylenes	EPA 624	**0.67**	0.22	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A811941	08/15/18	08/15/18	
o-Xylene	EPA 624	**0.57**	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A811941	08/15/18	08/15/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
Toluene	EPA 624	**0.43**	0.14	0.50	ug/L	1	A811941	08/15/18	08/15/18	J
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A811941	08/15/18	08/15/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A811941	08/15/18	08/15/18	

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Certificate of Analysis

Sample ID: A8H1776-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/13/18 - 10:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A811941	08/15/18	08/15/18	B2.1
Surrogate: 1,2-Dichloroethane-d4	EPA 624	99 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	100 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	95 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A812091	08/20/18	08/24/18	
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A812091	08/20/18	08/24/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A812091	08/20/18	08/24/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A812091	08/20/18	08/24/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A812091	08/20/18	08/24/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A812091	08/20/18	08/24/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
3,3-Dichlorobenzidine	EPA 625	ND	11	40	ug/L	20	A812091	08/20/18	08/24/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
4-Chloro-3-methylphenol	EPA 625	**0.11**	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	J
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A812091	08/20/18	08/24/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A812091	08/20/18	08/24/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A812091	08/20/18	08/24/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Benzo(a)pyrene	EPA 625	ND	0.066	2.0	ug/L	20	A812091	08/20/18	08/24/18	
Benzo(b)fluoranthene	EPA 625	ND	0.041	10	ug/L	20	A812091	08/20/18	08/24/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.077	0.20	ug/L	20	A812091	08/20/18	08/24/18	
Benzo(k)fluoranthene	EPA 625	ND	0.055	2.0	ug/L	20	A812091	08/20/18	08/24/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A812091	08/20/18	08/24/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A812091	08/20/18	08/24/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.062	0.20	ug/L	20	A812091	08/20/18	08/24/18	
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A812091	08/20/18	08/24/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A812091	08/20/18	08/24/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A812091	08/20/18	08/24/18	
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A812091	08/20/18	08/24/18	

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Certificate of Analysis

Sample ID: A8H1776-01
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/13/18 - 10:00
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A812091	08/20/18	08/24/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A812091	08/20/18	08/24/18	BS2.0
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.054	0.20	ug/L	20	A812091	08/20/18	08/24/18	
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Naphthalene	EPA 625	**0.20**	0.054	0.20	ug/L	20	A812091	08/20/18	08/24/18	
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A812091	08/20/18	08/24/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A812091	08/20/18	08/24/18	
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A812091	08/20/18	08/24/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A812091	08/20/18	08/24/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A812091	08/20/18	08/24/18	
Phenol	EPA 625	**0.51**	0.10	1.0	ug/L	1	A812091	08/20/18	08/24/18	J
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A812091	08/20/18	08/24/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	202 %		*Acceptable range: 53-200 %*			*Qualifiers -*	*SR1.0*		
Surrogate: 2-Fluorobiphenyl	EPA 625	75 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	79 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	88 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	97 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	103 %		*Acceptable range: 39-135 %*						

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Certificate of Analysis

Sample ID: A8H1776-01RE1
Sampled By: Hailie Hix
Sample Description: R/O Brine

Sample Date - Time: 08/13/18 - 10:00
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dinitrophenol	EPA 625	ND	2.7	10	ug/L	10	A812604	08/27/18	08/31/18	HT.x
2-Nitrophenol	EPA 625	ND	2.1	10	ug/L	10	A812604	08/27/18	08/31/18	HT.x
4,6-Dinitro-2-methylphenol	EPA 625	ND	1.1	5.0	ug/L	10	A812604	08/27/18	08/31/18	HT.x
Surrogate: 2,4,6-Tribromophenol	EPA 625	95 %		*Acceptable range: 53-200 %*			*Qualifiers -*	*HT1.4*		
Surrogate: 2-Fluorobiphenyl	EPA 625	71 %		*Acceptable range: 40-127 %*			*Qualifiers -*	*HT1.4*		
Surrogate: 2-Fluorophenol	EPA 625	67 %		*Acceptable range: 42-123 %*			*Qualifiers -*	*HT1.4*		
Surrogate: Nitrobenzene-d5	EPA 625	87 %		*Acceptable range: 49-133 %*			*Qualifiers -*	*HT1.4*		
Surrogate: Phenol-d6	EPA 625	79 %		*Acceptable range: 52-125 %*			*Qualifiers -*	*HT1.4*		
Surrogate: p-Terphenyl-d14	EPA 625	69 %		*Acceptable range: 39-135 %*			*Qualifiers -*	*HT1.4*		

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BSK Associates Laboratory Fresno
General Chemistry Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
SM 2540D - Quality Control												
Batch: A812290											Prepared: 8/22/2018	
Prep Method: Method Specific Preparation											Analyst: DEH	
Blank (A812290-BLK1)												
Total Suspended Solids	ND		5.0	mg/L							08/27/18	
Duplicate (A812290-DUP1), Source: A8H2057-03												
Total Suspended Solids	470		5.0	mg/L		460			3	20	08/27/18	
Duplicate (A812290-DUP2), Source: A8H2140-02												
Total Suspended Solids	200		5.0	mg/L		210			2	20	08/27/18	
SM 4500-Cl B - Quality Control												
Batch: A811902											Prepared: 8/15/2018	
Prep Method: Method Specific Preparation											Analyst: NDR	
Blank (A811902-BLK1)												
Chlorine, Residual (1)	ND		0.10	mg/L							08/15/18	
Blank Spike (A811902-BS1)												
Chlorine, Residual (1)	5.0		0.10	mg/L	5.0		99	80-120			08/15/18	
Duplicate (A811902-DUP1), Source: A8H1912-01												
Chlorine, Residual (1)	ND		0.10	mg/L		ND				20	08/15/18	
SM 4500-Cl G - Quality Control												
Batch: A812153											Prepared: 8/20/2018	
Prep Method: Method Specific Preparation											Analyst: BCB	
Blank (A812153-BLK1)												
Chlorine, Free	ND		0.10	mg/L							08/20/18	
Chlorine, Total	ND		0.10	mg/L							08/20/18	
Blank Spike (A812153-BS1)												
Chlorine, Free	0.98		0.10	mg/L	1.0		98	80-120			08/20/18	
Chlorine, Total	0.98		0.10	mg/L	1.0		98	80-120			08/20/18	
Duplicate (A812153-DUP1), Source: A8H2502-01												
Chlorine, Free	ND		0.10	mg/L		ND				20	08/20/18	
Chlorine, Total	ND		0.10	mg/L		ND				20	08/20/18	
SM 5210B - Quality Control												
Batch: A812811											Prepared: 8/29/2018	
Prep Method: Method Specific Preparation											Analyst: NDR	
Blank (A812811-BLK1)												
Biochemical Oxygen Demand	ND		1.0	mg/L							09/03/18	

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BSK Associates Laboratory Fresno

General Chemistry Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
SM 5210B - Quality Control												
Batch: A812811											Prepared: 8/29/2018	
Prep Method: Method Specific Preparation											Analyst: NDR	
Blank Spike (A812811-BS1)												
Biochemical Oxygen Demand	200		1.0	mg/L	200		100	85-115			09/03/18	
Duplicate (A812811-DUP1), Source: A8H3896-02												
Biochemical Oxygen Demand	ND		25	mg/L		ND				10	09/03/18	

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BSK Associates Laboratory Fresno
Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A811874											Prepared: 8/15/2018	
Prep Method: EPA 200.2 DRC											Analyst: PSK	
Blank (A811874-BLK1)												
Copper	ND		1.1	ug/L							08/16/18	
Nickel	ND		1.0	ug/L							08/16/18	
Blank (A811874-BLK2)												
Arsenic	ND		0.10	ug/L							08/17/18	
Blank Spike (A811874-BS1)												
Copper	49		1.1	ug/L	50		99	85-115			08/16/18	
Nickel	50		1.0	ug/L	50		99	85-115			08/16/18	
Blank Spike (A811874-BS2)												
Arsenic	48		0.10	ug/L	50		96	85-115			08/17/18	
Blank Spike Dup (A811874-BSD1)												
Copper	49		1.1	ug/L	50		98	85-115	1	20	08/16/18	
Nickel	51		1.0	ug/L	50		102	85-115	3	20	08/16/18	
Blank Spike Dup (A811874-BSD2)												
Arsenic	50		0.10	ug/L	50		99	85-115	4	20	08/17/18	
Matrix Spike (A811874-MS1), Source: A8H1875-02												
Copper	41		1.1	ug/L	50	2.4	76	70-130			08/16/18	
Nickel	44		1.0	ug/L	50	4.2	80	70-130			08/16/18	
Matrix Spike (A811874-MS2), Source: A8H1875-02												
Arsenic	64		0.50	ug/L	50	11	106	70-130			08/17/18	
Matrix Spike Dup (A811874-MSD1), Source: A8H1875-02												
Copper	40		1.1	ug/L	50	2.4	75	70-130	1	20	08/16/18	
Nickel	44		1.0	ug/L	50	4.2	79	70-130	1	20	08/16/18	
Matrix Spike Dup (A811874-MSD2), Source: A8H1875-02												
Arsenic	62		0.50	ug/L	50	11	102	70-130	3	20	08/17/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A812088											Prepared: 8/20/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank (A812088-BLK1)												
4,4'-DDD	ND	0.00072	0.050	ug/L							08/22/18	
4,4'-DDE	ND	0.00061	0.050	ug/L							08/22/18	
4,4'-DDT	ND	0.00070	0.010	ug/L							08/22/18	
Aldrin	ND	0.00079	0.0050	ug/L							08/22/18	
alpha-BHC	ND	0.0025	0.010	ug/L							08/22/18	
Aroclor-1016	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1221	ND	0.063	0.50	ug/L							08/22/18	
Aroclor-1232	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1242	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1248	ND	0.020	0.50	ug/L							08/22/18	
Aroclor-1254	ND	0.050	0.50	ug/L							08/22/18	
Aroclor-1260	ND	0.015	0.50	ug/L							08/22/18	
beta-BHC	ND	0.00054	0.0050	ug/L							08/22/18	
Chlordane	ND	0.026	0.10	ug/L							08/22/18	
delta-BHC	ND	0.00060	0.0050	ug/L							08/22/18	
Dieldrin	ND	0.00097	0.010	ug/L							08/22/18	
Endosulfan I	ND	0.00089	0.020	ug/L							08/22/18	
Endosulfan II	ND	0.0018	0.010	ug/L							08/22/18	
Endosulfan Sulfate	ND	0.00074	0.050	ug/L							08/22/18	
Endrin	ND	0.00081	0.010	ug/L							08/22/18	
Endrin Aldehyde	ND	0.00067	0.010	ug/L							08/22/18	
Heptachlor	ND	0.00069	0.010	ug/L							08/22/18	
Heptachlor Epoxide	ND	0.00069	0.010	ug/L							08/22/18	
Lindane	ND	0.0025	0.020	ug/L							08/22/18	
Toxaphene	ND	0.035	0.50	ug/L							08/22/18	
Surrogate: TCMX	*0.28*				*0.30*		*92*	*26-144*			08/22/18	
Blank Spike (A812088-BS1)												
4,4'-DDD	0.038	0.00072	0.050	ug/L	0.040		96	63-146			08/22/18	J
4,4'-DDE	0.039	0.00061	0.050	ug/L	0.040		99	49-150			08/22/18	J
4,4'-DDT	0.038	0.00070	0.010	ug/L	0.040		95	66-146			08/22/18	
Aldrin	0.037	0.00079	0.0050	ug/L	0.040		93	24-144			08/22/18	
alpha-BHC	0.036	0.0025	0.010	ug/L	0.040		91	32-176			08/22/18	
beta-BHC	0.039	0.00054	0.0050	ug/L	0.040		97	59-152			08/22/18	
delta-BHC	0.037	0.00060	0.0050	ug/L	0.040		92	46-156			08/22/18	
Dieldrin	0.038	0.00097	0.010	ug/L	0.040		95	62-146			08/22/18	
Endosulfan I	0.039	0.00089	0.020	ug/L	0.040		97	53-151			08/22/18	
Endosulfan II	0.040	0.0018	0.010	ug/L	0.040		100	63-144			08/22/18	
Endosulfan Sulfate	0.038	0.00074	0.050	ug/L	0.040		94	65-145			08/22/18	J
Endrin	0.042	0.00081	0.010	ug/L	0.040		106	55-153			08/22/18	
Endrin Aldehyde	0.031	0.00067	0.010	ug/L	0.040		79	68-128			08/22/18	
Heptachlor	0.046	0.00069	0.010	ug/L	0.040		116	34-147			08/22/18	
Heptachlor Epoxide	0.040	0.00069	0.010	ug/L	0.040		99	57-150			08/22/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A812088											Prepared: 8/20/2018	
Prep Method: EPA 3510C											Analyst: YNV	
Blank Spike (A812088-BS1)												
Lindane	0.036	0.0025	0.020	ug/L	0.040		89	58-148			08/22/18	
Surrogate: TCMX	*0.27*				*0.30*		*91*	*26-144*			08/22/18	
Blank Spike Dup (A812088-BSD1)												
4,4'-DDD	0.041	0.00072	0.050	ug/L	0.040		103	63-146	7	20	08/22/18	J
4,4'-DDE	0.042	0.00061	0.050	ug/L	0.040		104	49-150	6	20	08/22/18	J
4,4'-DDT	0.040	0.00070	0.010	ug/L	0.040		100	66-146	5	20	08/22/18	
Aldrin	0.040	0.00079	0.0050	ug/L	0.040		100	24-144	7	20	08/22/18	
alpha-BHC	0.037	0.0025	0.010	ug/L	0.040		92	32-176	1	20	08/22/18	
beta-BHC	0.040	0.00054	0.0050	ug/L	0.040		99	59-152	3	20	08/22/18	
delta-BHC	0.043	0.00060	0.0050	ug/L	0.040		107	46-156	15	20	08/22/18	
Dieldrin	0.040	0.00097	0.010	ug/L	0.040		100	62-146	5	20	08/22/18	
Endosulfan I	0.040	0.00089	0.020	ug/L	0.040		101	53-151	4	20	08/22/18	
Endosulfan II	0.042	0.0018	0.010	ug/L	0.040		106	63-144	6	20	08/22/18	
Endosulfan Sulfate	0.040	0.00074	0.050	ug/L	0.040		101	65-145	7	20	08/22/18	J
Endrin	0.038	0.00081	0.010	ug/L	0.040		94	55-153	11	20	08/22/18	
Endrin Aldehyde	0.034	0.00067	0.010	ug/L	0.040		85	68-128	8	20	08/22/18	
Heptachlor	0.049	0.00069	0.010	ug/L	0.040		123	34-147	6	20	08/22/18	
Heptachlor Epoxide	0.039	0.00069	0.010	ug/L	0.040		99	57-150	0	20	08/22/18	
Lindane	0.037	0.0025	0.020	ug/L	0.040		93	58-148	4	20	08/22/18	
Surrogate: TCMX	*0.26*				*0.30*		*88*	*26-144*			08/22/18	
Matrix Spike (A812088-MS1), Source: A8H1767-01												
4,4'-DDD	0.030	0.00072	0.050	ug/L	0.040	ND	75	63-146			08/22/18	J
4,4'-DDE	0.036	0.00061	0.050	ug/L	0.040	ND	89	49-150			08/22/18	J
4,4'-DDT	0.037	0.00070	0.010	ug/L	0.040	ND	91	66-146			08/22/18	
Aldrin	0.045	0.00079	0.0050	ug/L	0.040	ND	111	24-144			08/22/18	
alpha-BHC	0.032	0.0025	0.010	ug/L	0.040	ND	79	32-176			08/22/18	
beta-BHC	0.032	0.00054	0.0050	ug/L	0.040	ND	80	59-152			08/22/18	
delta-BHC	0.075	0.00060	0.0050	ug/L	0.040	ND	186	46-156			08/22/18	MS1.0 ***High***
Dieldrin	0.032	0.00097	0.010	ug/L	0.040	ND	79	62-146			08/22/18	
Endosulfan I	0.036	0.00089	0.020	ug/L	0.040	ND	89	53-151			08/22/18	
Endosulfan II	0.035	0.0018	0.010	ug/L	0.040	ND	88	63-144			08/22/18	
Endosulfan Sulfate	0.038	0.00074	0.050	ug/L	0.040	ND	94	65-145			08/22/18	J
Endrin	0.043	0.00081	0.010	ug/L	0.040	ND	108	55-153			08/22/18	
Endrin Aldehyde	0.018	0.00067	0.010	ug/L	0.040	ND	45	68-128			08/22/18	MS1.0 ***Low***
Heptachlor	0.045	0.00069	0.010	ug/L	0.040	ND	113	34-147			08/22/18	
Heptachlor Epoxide	0.034	0.00069	0.010	ug/L	0.040	ND	85	57-150			08/22/18	
Lindane	0.055	0.025	0.050	ug/L	0.040	ND	136	58-148			08/23/18	
Surrogate: TCMX	*0.29*				*0.30*		*96*	*26-144*			08/22/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811941-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							08/15/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							08/15/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							08/15/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							08/15/18	
1,1-Dichloroethene	0.15	0.12	0.50	ug/L							08/15/18	B2.0, J
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							08/15/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							08/15/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							08/15/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							08/15/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							08/15/18	
2-Butanone	ND	1.2	20	ug/L							08/15/18	
2-Hexanone	ND	1.2	20	ug/L							08/15/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							08/15/18	
Acetone	ND	1.4	5.0	ug/L							08/15/18	
Benzene	ND	0.15	0.50	ug/L							08/15/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							08/15/18	
Bromoform	ND	0.14	0.50	ug/L							08/15/18	
Bromomethane	0.24	0.19	1.0	ug/L							08/15/18	B2.0, J
Carbon disulfide	ND	1.6	5.0	ug/L							08/15/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							08/15/18	
Chlorobenzene	ND	0.13	0.50	ug/L							08/15/18	
Chloroethane	ND	0.13	0.50	ug/L							08/15/18	
Chloroform	ND	0.10	0.50	ug/L							08/15/18	
Chloromethane	0.20	0.18	0.50	ug/L							08/15/18	B2.0, J
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							08/15/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							08/15/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							08/15/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							08/15/18	
Dichloromethane	ND	0.11	0.50	ug/L							08/15/18	
Ethylbenzene	ND	0.13	0.50	ug/L							08/15/18	
Hexachloroethane	ND	0.15	1.0	ug/L							08/15/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							08/15/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							08/15/18	
o-Xylene	ND	0.12	0.50	ug/L							08/15/18	
Styrene	ND	0.16	0.50	ug/L							08/15/18	
Tetrachloroethene (PCE)	0.12	0.11	0.50	ug/L							08/15/18	B2.0, J
Toluene	ND	0.14	0.50	ug/L							08/15/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							08/15/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							08/15/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							08/15/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A811941-BLK1)												
Trichlorofluoromethane	ND	0.12	0.50	ug/L							08/15/18	
Vinyl Chloride	0.15	0.15	0.50	ug/L							08/15/18	B2.0, J
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*49*				*50*		*99*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*45*				*50*		*90*	*70-130*			08/15/18	
Blank Spike (A811941-BS1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		122	52-162			08/15/18	
1,1,2,2-Tetrachloroethane	9.6	0.12	0.50	ug/L	10		96	46-157			08/15/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		103	52-150			08/15/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10		117	59-155			08/15/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		120	10-234			08/15/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		100	18-190			08/15/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10		117	49-155			08/15/18	
1,2-Dichloropropane	12	0.12	0.50	ug/L	10		119	10-210			08/15/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		100	59-156			08/15/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190			08/15/18	
2-Butanone	11	1.2	20	ug/L	10		112	46-156			08/15/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135			08/15/18	J
4-Methyl-2-pentanone	11	0.97	20	ug/L	10		107	67-136			08/15/18	J
Acetone	11	1.4	5.0	ug/L	10		112	19-194			08/15/18	
Benzene	12	0.15	0.50	ug/L	10		118	37-151			08/15/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10		119	35-155			08/15/18	
Bromoform	10	0.14	0.50	ug/L	10		100	45-169			08/15/18	
Bromomethane	14	0.19	1.0	ug/L	10		144	10-242			08/15/18	
Carbon disulfide	12	1.6	5.0	ug/L	10		116	78-140			08/15/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		109	70-140			08/15/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		105	37-160			08/15/18	
Chloroethane	12	0.13	0.50	ug/L	10		121	14-230			08/15/18	
Chloroform	12	0.10	0.50	ug/L	10		117	51-138			08/15/18	
Chloromethane	14	0.18	0.50	ug/L	10		145	10-273			08/15/18	
cis-1,2-Dichloroethene	12	0.10	0.50	ug/L	10		119	81-130			08/15/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10		119	10-227			08/15/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		104	53-149			08/15/18	
Dichlorodifluoromethane	12	0.11	1.0	ug/L	10		123	52-171			08/15/18	
Dichloromethane	12	0.11	0.50	ug/L	10		120	10-221			08/15/18	
Ethylbenzene	11	0.13	0.50	ug/L	10		106	37-162			08/15/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		122	78-145			08/15/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		106	83-108			08/15/18	
Methyl-t-butyl ether	23	0.22	0.50	ug/L	20		117	79-131			08/15/18	
o-Xylene	11	0.12	0.50	ug/L	10		106	81-115			08/15/18	
Styrene	11	0.16	0.50	ug/L	10		106	78-117			08/15/18	
Tetrachloroethene (PCE)	10	0.11	0.50	ug/L	10		102	64-148			08/15/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A811941-BS1)												
Toluene	10	0.14	0.50	ug/L	10		104	47-150			08/15/18	
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10		121	54-156			08/15/18	
trans-1,3-Dichloropropene	11	0.12	0.50	ug/L	10		105	17-183			08/15/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		112	71-157			08/15/18	
Trichlorofluoromethane	12	0.12	0.50	ug/L	10		124	17-181			08/15/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		125	10-251			08/15/18	
Surrogate: 1,2-Dichloroethane-d4	*54*				*50*		*107*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*48*				*50*		*96*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*46*				*50*		*91*	*70-130*			08/15/18	
Blank Spike Dup (A811941-BSD1)												
1,1,1-Trichloroethane	12	0.14	0.50	ug/L	10		120	52-162	1	30	08/15/18	
1,1,2,2-Tetrachloroethane	10	0.12	0.50	ug/L	10		101	46-157	5	30	08/15/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10		102	52-150	1	30	08/15/18	
1,1-Dichloroethane	12	0.11	0.50	ug/L	10		116	59-155	1	30	08/15/18	
1,1-Dichloroethene	12	0.12	0.50	ug/L	10		121	10-234	0	30	08/15/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		102	18-190	2	30	08/15/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10		117	49-155	0	30	08/15/18	
1,2-Dichloropropane	12	0.12	0.50	ug/L	10		117	10-210	1	30	08/15/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		101	59-156	1	30	08/15/18	
1,4-Dichlorobenzene	11	0.12	0.50	ug/L	10		105	18-190	4	30	08/15/18	
2-Butanone	11	1.2	20	ug/L	10		112	46-156	1	30	08/15/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135	0	30	08/15/18	J
4-Methyl-2-pentanone	12	0.97	20	ug/L	10		118	67-136	9	30	08/15/18	J
Acetone	11	1.4	5.0	ug/L	10		109	19-194	3	30	08/15/18	
Benzene	12	0.15	0.50	ug/L	10		117	37-151	1	30	08/15/18	
Bromodichloromethane	12	0.10	0.50	ug/L	10		117	35-155	1	30	08/15/18	
Bromoform	10	0.14	0.50	ug/L	10		104	45-169	4	30	08/15/18	
Bromomethane	14	0.19	1.0	ug/L	10		136	10-242	6	30	08/15/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		115	78-140	1	30	08/15/18	
Carbon Tetrachloride	11	0.10	0.50	ug/L	10		109	70-140	1	30	08/15/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		104	37-160	1	30	08/15/18	
Chloroethane	12	0.13	0.50	ug/L	10		119	14-230	2	30	08/15/18	
Chloroform	11	0.10	0.50	ug/L	10		112	51-138	4	30	08/15/18	
Chloromethane	14	0.18	0.50	ug/L	10		140	10-273	3	30	08/15/18	
cis-1,2-Dichloroethene	12	0.10	0.50	ug/L	10		117	81-130	2	30	08/15/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10		118	10-227	1	30	08/15/18	
Dibromochloromethane	10	0.085	0.50	ug/L	10		103	53-149	1	30	08/15/18	
Dichlorodifluoromethane	12	0.11	1.0	ug/L	10		123	52-171	0	30	08/15/18	
Dichloromethane	12	0.11	0.50	ug/L	10		117	10-221	2	30	08/15/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		103	37-162	2	30	08/15/18	
Hexachloroethane	12	0.15	1.0	ug/L	10		124	78-145	2	30	08/15/18	
m,p-Xylenes	21	0.22	0.50	ug/L	20		104	83-108	1	30	08/15/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike Dup (A811941-BSD1)												
Methyl-t-butyl ether	23	0.22	0.50	ug/L	20		116	79-131	1	30	08/15/18	
o-Xylene	10	0.12	0.50	ug/L	10		104	81-115	2	30	08/15/18	
Styrene	10	0.16	0.50	ug/L	10		104	78-117	2	30	08/15/18	
Tetrachloroethene (PCE)	9.8	0.11	0.50	ug/L	10		98	64-148	4	30	08/15/18	
Toluene	10	0.14	0.50	ug/L	10		104	47-150	0	30	08/15/18	
trans-1,2-Dichloroethene	12	0.13	0.50	ug/L	10		118	54-156	2	30	08/15/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10		104	17-183	1	30	08/15/18	
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		108	71-157	4	30	08/15/18	
Trichlorofluoromethane	13	0.12	0.50	ug/L	10		126	17-181	1	30	08/15/18	
Vinyl Chloride	12	0.15	0.50	ug/L	10		124	10-251	1	30	08/15/18	
Surrogate: 1,2-Dichloroethane-d4	*52*				*50*		*105*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*101*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*47*				*50*		*94*	*70-130*			08/15/18	
Matrix Spike (A811941-MS1), Source: A8H1958-01												
1,1,1-Trichloroethane	14	0.14	0.50	ug/L	10	ND	136	52-162			08/15/18	
1,1,2,2-Tetrachloroethane	9.8	0.12	0.50	ug/L	10	ND	98	46-157			08/15/18	
1,1,2-Trichloroethane	10	0.14	0.50	ug/L	10	ND	103	52-150			08/15/18	
1,1-Dichloroethane	13	0.11	0.50	ug/L	10	ND	128	59-155			08/15/18	
1,1-Dichloroethene	14	0.12	0.50	ug/L	10	0.15	134	10-234			08/15/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	102	18-190			08/15/18	
1,2-Dichloroethane	12	0.10	0.50	ug/L	10	ND	123	49-155			08/15/18	
1,2-Dichloropropane	13	0.12	0.50	ug/L	10	ND	129	10-210			08/15/18	
1,3-Dichlorobenzene	11	0.11	0.50	ug/L	10	ND	105	59-156			08/15/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10	ND	104	18-190			08/15/18	
2-Butanone	13	1.2	20	ug/L	10	ND	131	46-156			08/15/18	J
2-Hexanone	10	1.2	20	ug/L	10	ND	101	56-135			08/15/18	J
4-Methyl-2-pentanone	13	0.97	20	ug/L	10	3.4	91	67-136			08/15/18	J
Acetone	13	1.4	5.0	ug/L	10	2.8	107	19-194			08/15/18	
Benzene	13	0.15	0.50	ug/L	10	ND	129	37-151			08/15/18	
Bromodichloromethane	57	0.10	0.50	ug/L	10	46	112	35-155			08/15/18	
Bromoform	11	0.14	0.50	ug/L	10	1.3	99	45-169			08/15/18	
Bromomethane	14	0.19	1.0	ug/L	10	ND	140	10-242			08/15/18	
Carbon disulfide	13	1.6	5.0	ug/L	10	ND	126	78-140			08/15/18	
Carbon Tetrachloride	13	0.10	0.50	ug/L	10	ND	126	70-140			08/15/18	
Chlorobenzene	11	0.13	0.50	ug/L	10	ND	108	37-160			08/15/18	
Chloroethane	15	0.13	0.50	ug/L	10	ND	147	14-230			08/15/18	
Chloroform	66	0.10	0.50	ug/L	10	54	113	51-138			08/15/18	
Chloromethane	18	0.18	0.50	ug/L	10	0.33	179	10-273			08/15/18	
cis-1,2-Dichloroethene	13	0.10	0.50	ug/L	10	ND	127	81-130			08/15/18	
cis-1,3-Dichloropropene	12	0.11	0.50	ug/L	10	ND	121	10-227			08/15/18	
Dibromochloromethane	27	0.085	0.50	ug/L	10	17	103	53-149			08/15/18	
Dichlorodifluoromethane	13	0.11	1.0	ug/L	10	0.25	127	52-171			08/15/18	

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BSK Associates Laboratory Fresno
Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A811941											Prepared: 8/15/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A811941-MS1), Source: A8H1958-01												
Dichloromethane	13	0.11	0.50	ug/L	10	ND	129	10-221			08/15/18	
Ethylbenzene	11	0.13	0.50	ug/L	10	ND	111	37-162			08/15/18	
Hexachloroethane	13	0.15	1.0	ug/L	10	0.33	123	78-145			08/15/18	
m,p-Xylenes	22	0.22	0.50	ug/L	20	ND	110	83-108			08/15/18	MS1.0 ***High***
Methyl-t-butyl ether	24	0.22	0.50	ug/L	20	ND	121	79-131			08/15/18	
o-Xylene	11	0.12	0.50	ug/L	10	ND	108	81-115			08/15/18	
Styrene	10	0.16	0.50	ug/L	10	ND	104	78-117			08/15/18	
Tetrachloroethene (PCE)	11	0.11	0.50	ug/L	10	ND	106	64-148			08/15/18	
Toluene	11	0.14	0.50	ug/L	10	ND	110	47-150			08/15/18	
trans-1,2-Dichloroethene	14	0.13	0.50	ug/L	10	ND	135	54-156			08/15/18	
trans-1,3-Dichloropropene	10	0.12	0.50	ug/L	10	ND	102	17-183			08/15/18	
Trichloroethene (TCE)	12	0.13	0.50	ug/L	10	ND	119	71-157			08/15/18	
Trichlorofluoromethane	14	0.12	0.50	ug/L	10	0.23	137	17-181			08/15/18	
Vinyl Chloride	14	0.15	0.50	ug/L	10	0.18	140	10-251			08/15/18	
Surrogate: 1,2-Dichloroethane-d4	*53*				*50*		*106*	*70-130*			08/15/18	
Surrogate: Bromofluorobenzene	*47*				*50*		*94*	*70-130*			08/15/18	
Surrogate: Toluene-d8	*46*				*50*		*91*	*70-130*			08/15/18	
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812091-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	0.50	ug/L							08/23/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	0.50	ug/L							08/23/18	
2,4,6-Trichlorophenol	ND	0.14	0.50	ug/L							08/23/18	
2,4-Dichlorophenol	ND	0.10	0.50	ug/L							08/23/18	
2,4-Dimethylphenol	ND	0.15	0.50	ug/L							08/23/18	
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							08/23/18	
2,4-Dinitrotoluene	ND	0.10	0.50	ug/L							08/23/18	
2,6-Dinitrotoluene	ND	0.36	0.50	ug/L							08/23/18	
2-Chloronaphthalene	ND	0.10	0.50	ug/L							08/23/18	
2-Chlorophenol	ND	0.11	0.50	ug/L							08/23/18	
2-Nitrophenol	ND	0.21	0.50	ug/L							08/23/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L							08/23/18	
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							08/23/18	
4-Bromophenyl phenyl ether	ND	0.10	0.50	ug/L							08/23/18	
4-Chloro-3-methylphenol	ND	0.10	0.50	ug/L							08/23/18	
4-Chlorophenyl phenyl ether	ND	0.23	0.50	ug/L							08/23/18	
4-Nitrophenol	ND	0.26	1.0	ug/L							08/23/18	
Acenaphthene	ND	0.0040	0.010	ug/L							08/23/18	
Acenaphthylene	ND	0.0023	0.010	ug/L							08/23/18	
Anthracene	ND	0.0020	0.010	ug/L							08/23/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812091-BLK1)												
Benzidine	ND	1.4	5.0	ug/L							08/23/18	
Benzo(a)anthracene	ND	0.0023	0.010	ug/L							08/23/18	
Benzo(a)pyrene	ND	0.0033	0.010	ug/L							08/23/18	
Benzo(b)fluoranthene	ND	0.0021	0.010	ug/L							08/23/18	
Benzo(g,h,i)perylene	ND	0.0039	0.010	ug/L							08/23/18	
Benzo(k)fluoranthene	ND	0.0028	0.010	ug/L							08/23/18	
Bis(2-chloroethoxy)methane	ND	0.10	0.50	ug/L							08/23/18	
Bis(2-chloroethyl) ether	ND	0.15	0.50	ug/L							08/23/18	
Bis(2-chloroisopropyl) ether	ND	0.13	0.50	ug/L							08/23/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	1.0	ug/L							08/23/18	
Butyl benzyl phthalate	ND	0.10	0.50	ug/L							08/23/18	
Chrysene	ND	0.0011	0.010	ug/L							08/23/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.010	ug/L							08/23/18	
Diethyl phthalate	ND	0.10	0.50	ug/L							08/23/18	
Dimethyl phthalate	ND	0.10	0.50	ug/L							08/23/18	
Di-n-butyl phthalate	ND	0.14	0.50	ug/L							08/23/18	
Di-n-octyl phthalate	ND	0.11	0.50	ug/L							08/23/18	
Fluoranthene	ND	0.0012	0.010	ug/L							08/23/18	
Fluorene	ND	0.0043	0.010	ug/L							08/23/18	
Hexachlorobenzene	ND	0.15	0.50	ug/L							08/23/18	
Hexachlorobutadiene	ND	0.13	0.50	ug/L							08/23/18	
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L							08/23/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.010	ug/L							08/23/18	
Isophorone	ND	0.11	0.50	ug/L							08/23/18	
Naphthalene	ND	0.0027	0.010	ug/L							08/23/18	
Nitrobenzene	ND	0.11	0.50	ug/L							08/23/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	0.50	ug/L							08/23/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	0.50	ug/L							08/23/18	
N-Nitrosodiphenylamine (as DPA)	ND	0.24	0.50	ug/L							08/23/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							08/23/18	
Phenanthrene	ND	0.0024	0.010	ug/L							08/23/18	
Phenol	ND	0.10	0.50	ug/L							08/23/18	
Pyrene	ND	0.0014	0.010	ug/L							08/23/18	
Surrogate: 2,4,6-Tribromophenol	*6.9*				*5.0*		*138*	*53-200*			08/23/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*80*	*40-127*			08/23/18	
Surrogate: 2-Fluorophenol	*3.7*				*5.0*		*74*	*42-123*			08/23/18	
Surrogate: Nitrobenzene-d5	*3.0*				*5.0*		*60*	*49-133*			08/23/18	
Surrogate: Phenol-d6	*4.7*				*5.0*		*93*	*52-125*			08/23/18	
Surrogate: p-Terphenyl-d14	*4.6*				*5.0*		*91*	*39-135*			08/23/18	
Blank Spike (A812091-BS1)												
1,2,4-Trichlorobenzene	3.0	0.10	0.50	ug/L	5.0		60	44-142			08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.8	0.10	0.50	ug/L	5.0		75	30-130			08/24/18	
2,4,6-Trichlorophenol	4.3	0.14	0.50	ug/L	5.0		85	37-144			08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A812091											Prepared: 8/20/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike (A812091-BS1)													
2,4-Dichlorophenol	3.9	0.10	0.50	ug/L	5.0		77	39-135			08/24/18		
2,4-Dimethylphenol	0.69	0.15	0.50	ug/L	5.0		14	10-175			08/24/18		
2,4-Dinitrophenol	1.7	0.27	1.0	ug/L	5.0		35	10-191			08/24/18		
2,4-Dinitrotoluene	4.6	0.10	0.50	ug/L	5.0		91	39-139			08/24/18		
2,6-Dinitrotoluene	4.5	0.36	0.50	ug/L	5.0		89	50-158			08/24/18		
2-Chloronaphthalene	4.0	0.10	0.50	ug/L	5.0		80	60-118			08/24/18		
2-Chlorophenol	3.7	0.11	0.50	ug/L	5.0		75	23-134			08/24/18		
2-Nitrophenol	2.4	0.21	0.50	ug/L	5.0		47	29-182			08/24/18		
3,3-Dichlorobenzidine	8.9	0.54	2.0	ug/L	20		44	10-200			08/24/18		
4,6-Dinitro-2-methylphenol	0.91	0.11	0.50	ug/L	5.0		18	10-181			08/24/18		
4-Bromophenyl phenyl ether	4.2	0.10	0.50	ug/L	5.0		84	53-127			08/24/18		
4-Chloro-3-methylphenol	3.9	0.10	0.50	ug/L	5.0		78	22-147			08/24/18		
4-Chlorophenyl phenyl ether	4.3	0.23	0.50	ug/L	5.0		85	25-158			08/24/18		
4-Nitrophenol	4.5	0.26	1.0	ug/L	5.0		89	10-132			08/24/18		
Acenaphthene	0.082	0.0040	0.010	ug/L	0.10		82	47-145			08/24/18		
Acenaphthylene	0.069	0.0023	0.010	ug/L	0.10		69	33-145			08/24/18		
Anthracene	0.081	0.0020	0.010	ug/L	0.10		81	27-133			08/24/18		
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			08/24/18	BS	***Low***
Benzo(a)anthracene	0.092	0.0023	0.010	ug/L	0.10		92	33-143			08/24/18		
Benzo(a)pyrene	0.069	0.0033	0.010	ug/L	0.10		69	17-163			08/24/18		
Benzo(g,h,i)perylene	0.089	0.0039	0.010	ug/L	0.10		89	10-200			08/24/18		
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0		87	33-184			08/24/18		
Bis(2-chloroethyl) ether	4.6	0.15	0.50	ug/L	5.0		91	12-158			08/24/18		
Bis(2-chloroisopropyl) ether	4.4	0.13	0.50	ug/L	5.0		89	36-166			08/24/18		
Bis(2-ethylhexyl) phthalate	4.4	0.29	1.0	ug/L	5.0		88	10-158			08/24/18		
Butyl benzyl phthalate	2.9	0.10	0.50	ug/L	5.0		59	10-152			08/24/18		
Chrysene	0.088	0.0011	0.010	ug/L	0.10		88	17-168			08/24/18		
Dibenzo(a,h)anthracene	0.10	0.0031	0.010	ug/L	0.10		101	10-200			08/24/18		
Diethyl phthalate	3.0	0.10	0.50	ug/L	5.0		61	10-114			08/24/18		
Dimethyl phthalate	1.7	0.10	0.50	ug/L	5.0		33	10-112			08/24/18		
Di-n-butyl phthalate	3.7	0.14	0.50	ug/L	5.0		75	10-118			08/24/18		
Di-n-octyl phthalate	4.5	0.11	0.50	ug/L	5.0		89	10-146			08/24/18		
Fluoranthene	0.091	0.0012	0.010	ug/L	0.10		91	26-137			08/24/18		
Fluorene	0.088	0.0043	0.010	ug/L	0.10		88	59-121			08/24/18		
Hexachlorobenzene	4.1	0.15	0.50	ug/L	5.0		82	10-152			08/24/18		
Hexachlorobutadiene	2.6	0.13	0.50	ug/L	5.0		51	24-116			08/24/18		
Hexachlorocyclopentadiene	0.35	0.14	0.50	ug/L	5.0		7	10-130			08/24/18	BS, J	***Low***
Indeno(1,2,3-cd)pyrene	0.087	0.0027	0.010	ug/L	0.10		87	10-171			08/24/18		
Isophorone	4.4	0.11	0.50	ug/L	5.0		88	21-196			08/24/18		
Naphthalene	0.077	0.0027	0.010	ug/L	0.10		77	21-133			08/24/18		
Nitrobenzene	5.4	0.11	0.50	ug/L	5.0		107	35-180			08/24/18		
N-Nitrosodimethylamine (NDMA)	3.3	0.48	0.50	ug/L	5.0		66	10-130			08/24/18		
N-Nitrosodi-n-propylamine (NDPA)	3.6	0.10	0.50	ug/L	5.0		72	10-200			08/24/18		

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A812091-BS1)												
N-Nitrosodiphenylamine (as DPA)	3.6	0.24	0.50	ug/L	5.0		72	10-130			08/24/18	
Pentachlorophenol	4.2	0.20	1.0	ug/L	5.0		83	14-176			08/24/18	
Phenanthrene	0.086	0.0024	0.010	ug/L	0.10		86	54-120			08/24/18	
Phenol	4.0	0.10	0.50	ug/L	5.0		79	10-112			08/24/18	
Pyrene	0.087	0.0014	0.010	ug/L	0.10		87	52-115			08/24/18	
Surrogate: 2,4,6-Tribromophenol	*8.0*				*5.0*		*159*	*53-200*			08/24/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*81*	*40-127*			08/24/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*81*	*42-123*			08/24/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*87*	*49-133*			08/24/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*89*	*52-125*			08/24/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*89*	*39-135*			08/24/18	
Blank Spike Dup (A812091-BSD1)												
1,2,4-Trichlorobenzene	3.2	0.10	0.50	ug/L	5.0		63	44-142	6	30	08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	2.5	0.10	0.50	ug/L	5.0		50	30-130	40	30	08/24/18	BS3.0
2,4,6-Trichlorophenol	4.4	0.14	0.50	ug/L	5.0		87	37-144	2	30	08/24/18	
2,4-Dichlorophenol	4.1	0.10	0.50	ug/L	5.0		81	39-135	5	30	08/24/18	
2,4-Dimethylphenol	1.2	0.15	0.50	ug/L	5.0		24	10-175	53	30	08/24/18	BS3.0
2,4-Dinitrophenol	ND	0.27	1.0	ug/L	5.0		0	10-191		30	08/24/18	BS ***Low***
2,4-Dinitrotoluene	4.5	0.10	0.50	ug/L	5.0		90	39-139	2	30	08/24/18	
2,6-Dinitrotoluene	4.3	0.36	0.50	ug/L	5.0		86	50-158	3	30	08/24/18	
2-Chloronaphthalene	4.0	0.10	0.50	ug/L	5.0		81	60-118	1	30	08/24/18	
2-Chlorophenol	3.8	0.11	0.50	ug/L	5.0		76	23-134	2	30	08/24/18	
2-Nitrophenol	0.49	0.21	0.50	ug/L	5.0		10	29-182	131	30	08/24/18	BS, BS4.0, J ***Low***
3,3-Dichlorobenzidine	5.5	0.54	2.0	ug/L	20		27	10-200	47	30	08/24/18	BS3.0
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L	5.0		0	10-181		30	08/24/18	BS ***Low***
4-Bromophenyl phenyl ether	4.2	0.10	0.50	ug/L	5.0		84	53-127	1	30	08/24/18	
4-Chloro-3-methylphenol	4.2	0.10	0.50	ug/L	5.0		83	22-147	6	30	08/24/18	
4-Chlorophenyl phenyl ether	4.2	0.23	0.50	ug/L	5.0		84	25-158	1	30	08/24/18	
4-Nitrophenol	4.4	0.26	1.0	ug/L	5.0		89	10-132	1	30	08/24/18	
Acenaphthene	0.078	0.0040	0.010	ug/L	0.10		78	47-145	5	30	08/24/18	
Acenaphthylene	0.064	0.0023	0.010	ug/L	0.10		64	33-145	8	30	08/24/18	
Anthracene	0.074	0.0020	0.010	ug/L	0.10		74	27-133	9	30	08/24/18	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	08/24/18	BS ***Low***
Benzo(a)anthracene	0.088	0.0023	0.010	ug/L	0.10		88	33-143	4	30	08/24/18	
Benzo(a)pyrene	0.071	0.0033	0.010	ug/L	0.10		71	17-163	3	30	08/24/18	
Benzo(g,h,i)perylene	0.090	0.0039	0.010	ug/L	0.10		90	10-200	1	30	08/24/18	
Bis(2-chloroethoxy)methane	4.4	0.10	0.50	ug/L	5.0		88	33-184	0	30	08/24/18	
Bis(2-chloroethyl) ether	4.4	0.15	0.50	ug/L	5.0		89	12-158	3	30	08/24/18	
Bis(2-chloroisopropyl) ether	4.3	0.13	0.50	ug/L	5.0		86	36-166	3	30	08/24/18	
Bis(2-ethylhexyl) phthalate	4.4	0.29	1.0	ug/L	5.0		88	10-158	0	30	08/24/18	
Butyl benzyl phthalate	3.1	0.10	0.50	ug/L	5.0		61	10-152	4	30	08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A812091-BSD1)												
Chrysene	0.086	0.0011	0.010	ug/L	0.10		86	17-168	2	30	08/24/18	
Dibenzo(a,h)anthracene	0.10	0.0031	0.010	ug/L	0.10		101	10-200	1	30	08/24/18	
Diethyl phthalate	3.1	0.10	0.50	ug/L	5.0		62	10-114	1	30	08/24/18	
Dimethyl phthalate	1.8	0.10	0.50	ug/L	5.0		36	10-112	8	30	08/24/18	
Di-n-butyl phthalate	3.8	0.14	0.50	ug/L	5.0		76	10-118	2	30	08/24/18	
Di-n-octyl phthalate	4.4	0.11	0.50	ug/L	5.0		89	10-146	1	30	08/24/18	
Fluoranthene	0.092	0.0012	0.010	ug/L	0.10		92	26-137	1	30	08/24/18	
Fluorene	0.087	0.0043	0.010	ug/L	0.10		87	59-121	1	30	08/24/18	
Hexachlorobenzene	4.2	0.15	0.50	ug/L	5.0		84	10-152	3	30	08/24/18	
Hexachlorobutadiene	2.7	0.13	0.50	ug/L	5.0		55	24-116	7	30	08/24/18	
Hexachlorocyclopentadiene	0.38	0.14	0.50	ug/L	5.0		8	10-130	8	30	08/24/18	BS, J ***Low***
Indeno(1,2,3-cd)pyrene	0.087	0.0027	0.010	ug/L	0.10		87	10-171	0	30	08/24/18	
Isophorone	4.3	0.11	0.50	ug/L	5.0		87	21-196	1	30	08/24/18	
Naphthalene	0.079	0.0027	0.010	ug/L	0.10		79	21-133	2	30	08/24/18	
Nitrobenzene	5.3	0.11	0.50	ug/L	5.0		105	35-180	2	30	08/24/18	
N-Nitrosodimethylamine (NDMA)	3.2	0.48	0.50	ug/L	5.0		63	10-130	5	30	08/24/18	
N-Nitrosodi-n-propylamine (NDPA)	3.5	0.10	0.50	ug/L	5.0		71	10-200	2	30	08/24/18	
N-Nitrosodiphenylamine (as DPA)	3.4	0.24	0.50	ug/L	5.0		68	10-130	6	30	08/24/18	
Pentachlorophenol	4.2	0.20	1.0	ug/L	5.0		85	14-176	2	30	08/24/18	
Phenanthrene	0.085	0.0024	0.010	ug/L	0.10		85	54-120	1	30	08/24/18	
Phenol	4.1	0.10	0.50	ug/L	5.0		82	10-112	3	30	08/24/18	
Pyrene	0.088	0.0014	0.010	ug/L	0.10		88	52-115	1	30	08/24/18	
Surrogate: 2,4,6-Tribromophenol	*8.3*				*5.0*		*167*	*53-200*			08/24/18	
Surrogate: 2-Fluorobiphenyl	*4.0*				*5.0*		*79*	*40-127*			08/24/18	
Surrogate: 2-Fluorophenol	*3.6*				*5.0*		*72*	*42-123*			08/24/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*87*	*49-133*			08/24/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*88*	*52-125*			08/24/18	
Surrogate: p-Terphenyl-d14	*4.4*				*5.0*		*89*	*39-135*			08/24/18	
Matrix Spike (A812091-MS1), Source: A8H1767-01												
1,2,4-Trichlorobenzene	3.0	0.10	0.50	ug/L	4.9	ND	61	44-142			08/24/18	
1,2-Diphenylhydrazine (as Azobenzene)	3.8	0.10	0.50	ug/L	4.9	ND	77	30-130			08/24/18	
2,4,6-Trichlorophenol	4.5	0.14	0.50	ug/L	4.9	ND	93	37-144			08/24/18	
2,4-Dichlorophenol	4.1	0.10	0.50	ug/L	4.9	ND	84	39-135			08/24/18	
2,4-Dimethylphenol	1.4	0.15	0.50	ug/L	4.9	ND	28	32-119			08/24/18	MS1.0 ***Low***
2,4-Dinitrophenol	4.9	0.27	1.0	ug/L	4.9	ND	100	10-191			08/24/18	
2,4-Dinitrotoluene	4.7	0.10	0.50	ug/L	4.9	ND	96	39-139			08/24/18	
2,6-Dinitrotoluene	4.7	0.36	0.50	ug/L	4.9	ND	97	50-158			08/24/18	
2-Chloronaphthalene	3.8	0.10	0.50	ug/L	4.9	ND	78	60-118			08/24/18	
2-Chlorophenol	3.8	0.11	0.50	ug/L	4.9	ND	77	23-134			08/24/18	
2-Nitrophenol	3.8	0.21	0.50	ug/L	4.9	ND	78	29-182			08/24/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L	20	ND	0	10-200			08/24/18	MS1.0 ***Low***
4,6-Dinitro-2-methylphenol	4.1	0.11	0.50	ug/L	4.9	ND	83	10-181			08/24/18	
4-Bromophenyl phenyl ether	4.1	0.10	0.50	ug/L	4.9	ND	84	53-127			08/24/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A812091-MS1), Source: A8H1767-01												
4-Chloro-3-methylphenol	4.3	0.10	0.50	ug/L	4.9	ND	89	22-147			08/24/18	
4-Chlorophenyl phenyl ether	4.1	0.23	0.50	ug/L	4.9	ND	84	25-158			08/24/18	
4-Nitrophenol	4.8	0.26	1.0	ug/L	4.9	ND	99	10-132			08/24/18	
Acenaphthene	0.082	0.0040	0.010	ug/L	0.098	ND	84	47-145			08/24/18	
Acenaphthylene	0.068	0.0023	0.010	ug/L	0.098	ND	70	33-145			08/24/18	
Anthracene	0.068	0.0020	0.010	ug/L	0.098	ND	70	27-133			08/24/18	
Benzidine	ND	1.4	5.0	ug/L	20	ND	0	10-200			08/24/18	MS1.0 ***Low***
Benzo(a)anthracene	0.077	0.0023	0.010	ug/L	0.098	ND	79	33-143			08/24/18	
Benzo(a)pyrene	0.066	0.0033	0.010	ug/L	0.098	ND	68	17-163			08/24/18	
Benzo(g,h,i)perylene	0.031	0.0039	0.010	ug/L	0.098	ND	31	10-200			08/24/18	
Bis(2-chloroethoxy)methane	4.3	0.10	0.50	ug/L	4.9	ND	88	33-184			08/24/18	
Bis(2-chloroethyl) ether	4.3	0.15	0.50	ug/L	4.9	ND	87	12-158			08/24/18	
Bis(2-chloroisopropyl) ether	4.2	0.13	0.50	ug/L	4.9	ND	86	36-166			08/24/18	
Bis(2-ethylhexyl) phthalate	4.3	0.29	1.0	ug/L	4.9	ND	88	10-158			08/24/18	
Butyl benzyl phthalate	3.3	0.10	0.50	ug/L	4.9	ND	68	10-152			08/24/18	
Chrysene	0.082	0.0011	0.010	ug/L	0.098	ND	84	17-168			08/24/18	
Dibenzo(a,h)anthracene	0.045	0.0031	0.010	ug/L	0.098	ND	46	10-200			08/24/18	
Diethyl phthalate	3.5	0.10	0.50	ug/L	4.9	ND	72	10-114			08/24/18	
Dimethyl phthalate	2.3	0.10	0.50	ug/L	4.9	ND	46	10-112			08/24/18	
Di-n-butyl phthalate	3.8	0.14	0.50	ug/L	4.9	ND	79	10-118			08/24/18	
Di-n-octyl phthalate	4.3	0.11	0.50	ug/L	4.9	ND	89	10-146			08/24/18	
Fluoranthene	0.093	0.0012	0.010	ug/L	0.098	ND	96	26-137			08/24/18	
Fluorene	0.089	0.0043	0.010	ug/L	0.098	ND	91	59-121			08/24/18	
Hexachlorobenzene	4.1	0.15	0.50	ug/L	4.9	ND	83	10-152			08/24/18	
Hexachlorobutadiene	2.8	0.13	0.50	ug/L	4.9	ND	58	24-116			08/24/18	
Hexachlorocyclopentadiene	0.41	0.14	0.50	ug/L	4.9	ND	8	10-130			08/24/18	MS1.0 ***Low*** , J
Indeno(1,2,3-cd)pyrene	0.038	0.0027	0.010	ug/L	0.098	ND	39	10-171			08/24/18	
Isophorone	4.3	0.11	0.50	ug/L	4.9	ND	89	21-196			08/24/18	
Naphthalene	0.12	0.0027	0.010	ug/L	0.098	ND	124	21-133			08/24/18	
Nitrobenzene	5.0	0.11	0.50	ug/L	4.9	ND	103	35-180			08/24/18	
N-Nitrosodimethylamine (NDMA)	3.0	0.48	0.50	ug/L	4.9	ND	62	10-130			08/24/18	
N-Nitrosodi-n-propylamine (NDPA)	3.8	0.10	0.50	ug/L	4.9	ND	77	10-200			08/24/18	
N-Nitrosodiphenylamine (as DPA)	3.6	0.24	0.50	ug/L	4.9	ND	73	10-130			08/24/18	
Pentachlorophenol	5.5	0.20	1.0	ug/L	4.9	ND	113	14-176			08/24/18	
Phenanthrene	0.088	0.0024	0.010	ug/L	0.098	ND	90	54-120			08/24/18	
Phenol	4.1	0.10	0.50	ug/L	4.9	ND	84	10-112			08/24/18	
Pyrene	0.095	0.0014	0.010	ug/L	0.098	ND	97	52-115			08/24/18	
Surrogate: 2,4,6-Tribromophenol	*9.5*				*4.9*		*194*	*53-200*			08/24/18	
Surrogate: 2-Fluorobiphenyl	*3.8*				*4.9*		*78*	*40-127*			08/24/18	
Surrogate: 2-Fluorophenol	*3.9*				*4.9*		*80*	*42-123*			08/24/18	
Surrogate: Nitrobenzene-d5	*4.2*				*4.9*		*86*	*49-133*			08/24/18	
Surrogate: Phenol-d6	*4.3*				*4.9*		*89*	*52-125*			08/24/18	
Surrogate: p-Terphenyl-d14	*4.5*				*4.9*		*91*	*39-135*			08/24/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812091											Prepared: 8/20/2018	
Prep Method: EPA 3520C											Analyst: YNV	
EPA 625 - Quality Control												
Batch: A812604											Prepared: 8/27/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812604-BLK1)												
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							08/31/18	
2-Nitrophenol	ND	0.21	0.50	ug/L							08/31/18	
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							08/31/18	
Surrogate: 2,4,6-Tribromophenol	*6.7*				*5.0*		*134*	*53-200*			08/31/18	
Surrogate: 2-Fluorobiphenyl	*4.4*				*5.0*		*87*	*40-127*			08/31/18	
Surrogate: 2-Fluorophenol	*3.6*				*5.0*		*72*	*42-123*			08/31/18	
Surrogate: Nitrobenzene-d5	*3.6*				*5.0*		*73*	*49-133*			08/31/18	
Surrogate: Phenol-d6	*4.8*				*5.0*		*95*	*52-125*			08/31/18	
Surrogate: p-Terphenyl-d14	*4.8*				*5.0*		*96*	*39-135*			08/31/18	
Blank Spike (A812604-BS1)												
2,4-Dinitrophenol	2.7	0.27	1.0	ug/L	5.0		53	10-191			08/31/18	
2-Nitrophenol	3.6	0.21	0.50	ug/L	5.0		72	29-182			08/31/18	
4,6-Dinitro-2-methylphenol	1.8	0.11	0.50	ug/L	5.0		35	10-181			08/31/18	
Surrogate: 2,4,6-Tribromophenol	*7.2*				*5.0*		*144*	*53-200*			08/31/18	
Surrogate: 2-Fluorobiphenyl	*4.5*				*5.0*		*90*	*40-127*			08/31/18	
Surrogate: 2-Fluorophenol	*3.5*				*5.0*		*69*	*42-123*			08/31/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*89*	*49-133*			08/31/18	
Surrogate: Phenol-d6	*4.5*				*5.0*		*89*	*52-125*			08/31/18	
Surrogate: p-Terphenyl-d14	*4.7*				*5.0*		*94*	*39-135*			08/31/18	
Blank Spike Dup (A812604-BSD1)												
2,4-Dinitrophenol	3.1	0.27	1.0	ug/L	5.0		61	10-191	14	30	08/31/18	
2-Nitrophenol	3.9	0.21	0.50	ug/L	5.0		77	29-182	7	30	08/31/18	
4,6-Dinitro-2-methylphenol	2.1	0.11	0.50	ug/L	5.0		43	10-181	20	30	08/31/18	
Surrogate: 2,4,6-Tribromophenol	*7.2*				*5.0*		*145*	*53-200*			08/31/18	
Surrogate: 2-Fluorobiphenyl	*4.4*				*5.0*		*89*	*40-127*			08/31/18	
Surrogate: 2-Fluorophenol	*3.5*				*5.0*		*70*	*42-123*			08/31/18	
Surrogate: Nitrobenzene-d5	*4.4*				*5.0*		*89*	*49-133*			08/31/18	
Surrogate: Phenol-d6	*4.4*				*5.0*		*87*	*52-125*			08/31/18	
Surrogate: p-Terphenyl-d14	*4.5*				*5.0*		*90*	*39-135*			08/31/18	
Matrix Spike (A812604-MS1), Source: A8H1776-01RE1												
2,4-Dinitrophenol	7.9	2.7	10	ug/L	4.8	ND	163	10-191			08/31/18	J
2-Nitrophenol	4.2	2.1	5.0	ug/L	4.8	ND	87	29-182			08/31/18	J
4,6-Dinitro-2-methylphenol	5.4	1.1	5.0	ug/L	4.8	ND	113	10-181			08/31/18	
Surrogate: 2,4,6-Tribromophenol	*4.9*				*4.8*		*102*	*53-200*			08/31/18	
Surrogate: 2-Fluorobiphenyl	*3.7*				*4.8*		*77*	*40-127*			08/31/18	
Surrogate: 2-Fluorophenol	*3.0*				*4.8*		*62*	*42-123*			08/31/18	
Surrogate: Nitrobenzene-d5	*4.4*				*4.8*		*92*	*49-133*			08/31/18	
Surrogate: Phenol-d6	*4.0*				*4.8*		*82*	*52-125*			08/31/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812604											Prepared: 8/27/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A812604-MS1), Source: A8H1776-01RE1												
Surrogate: p-Terphenyl-d14	*3.5*				*4.8*		*72*	*39-135*			08/31/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-003	State of California - ELAP	2993
State of Oregon - NELAP	4119-003				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-17

A8H1776

08142018

Abalo1080

Turnaround: Standard
Due Date: 8/28/2018

Abalone Coast Analytical, Inc.

Printed: 8/14/2018 6:01:32PM

2.5 #625

A8H1776 08/14/2018
Abalo1080 10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

24 H ☐ ay ☐ **Lab Reference #** 18-5135-1

Client Full Name/ Business:	Address	City	State	Zip
City of Pismo Beach				
Bill To: **Same**				

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name
Hailie Hit
Hailie Hit

Project:	**R/O Brine Analysis**
Contact Full Name:	**Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	08/13/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	**AQ**	21 24	3x p/unp half gal, 4x p/unp 1 liter	-6 -1
	1000	EPA 625, EPA, 608, EPA 624, TCDD Equivalents *Cl_2		1 1 on	6x Ag/unp, 3x p/HNO3 1 liter	
		Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
		2, 3 Species Chronic Tox: Urchin, Kelp, Topsmelt			1x p/unp 5 gal	
R/O Feed Water	08/13/18	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	**AQ**	**15**	p/unp half gal, p/unp 1 liter	-2
	1020	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
					3x VV/HCl, 1x VV/unp	

Relinquished By: Hail Hit	Received By:	Received By:	Lab:
Date/Time: 1045 08/13/18	Date/Time: 8/13/18 1115	Date/Time: 8/14/18 1351	
Lab:	Lab:	Lab:	Lab:

Method Of Shipment:
Client ✓
Courier
Other:

Condition
Intact (y/n) yy
Sediment no
Temp. 22°C
On Ice (Yes) No

Lab use only
Sent to:
State Forms sent:

Remarks: *Urchin or kelp TBD

ShareFile: ☐

Email: KKranz@carollo.com, rfleming@pismobeach.org **Due Date:**

GSO ES PW FOAM

*add Cl_2 as per Caitlin Galloway ~~8/13~~ 8/14/18 MKK

A8H1776 08/14/2018
Abalo1080 10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No (NA)	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	(Yes) No NA Yes (No) NA
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	(Yes) No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received ("—" means preservation/chlorine checks are either N/A or are performed in the lab)

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?					
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap - HA ★	—	—	1C, 1★				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	P F			40148		
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F			★		
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	3C				
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C				
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label **515**	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label **548, THM, 524**	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label **531**	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label **DBPs**	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—	3V				
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other: NONE CG			1V				
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Solids: Brass / Steel / Plastic Bag	—	—					

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: CL @ 1714 Labels checked by: JMD @ 1721 RUSH Paged by: _____ @ _____

External

A8H1776

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: August 30, 2018

Work Order Number: A8H1776

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8H1776-01 R/O Brine	08/13/18 (10:00)	Water	900.0 901.1	Gross Beta K-40	122.69 40	± ±	9.83 276	10.47 279

Analyses Date: August 29-30, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	328.76 pCi	311.12 pCi	94.63	5.37	A
Gamma (Cs-137)	786.26 pCi	753.92 pCi	95.88	4.12	A

Flag:

A = result accepted, Bias ≤ 20%
N = result not acceptable, Bias > 20%

Patricia Davi
Patricia Davi
QA/QC Manager
Davi Laboratories

2508-39

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H1776

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Davi Laboratories
730 Alfred Nobel Drive
Hercules, CA 94547-1805
Phone :(510) 724-9450
Fax: -
Turnaround (Days): Standard
QC Deliverables: I (STD) III IV

Sample ID	Samp Desc		Sample Date
A8H1776-01	R/O Brine	Client Matrix Water	08/13/2018 10:00
Lab Matrix:	Water		
Analysis:	1 L P HNO_3		
EXT-Gross Beta	1/2 g NON e	Potassium-40 via EPA 901.1	
EXT-Miscellaneous			

39

Released By Date Received By Angela Davi 8/17/18 13:15

Released By Date Received By Date

CERES Analytical Laboratory, Inc.
4919 Windplay Dr Suite 1, El Dorado Hills, CA 95762

August 24, 2018

Ceres ID: 12293

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the one waste water sample received on August 17, 2018. This sample was analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8H1776.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12293-001	R/O Brine A7H1776-01	8/17/2018	8/13/2018 10:00

Section II: Data Summary

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Quality Assurance Sample Method Blank		Date Received: NA
	QC Batch #: 1845	Date Extracted: 8/22/2018
	Matrix: Waste Water	ZB-5MS Analysis: 8/23/2018
Project ID: A8H1776	Sample Size: 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 2.83	0.887	5.00	
12378-PeCDD	DL= 3.52	2.56	25.0	
123478-HxCDD	DL= 6.49	3.08	25.0	
123678-HxCDD	DL= 7.16	5.29	25.0	
123789-HxCDD	DL= 6.68	13.1	25.0	
1234678-HpCDD	DL= 7.70	5.15	25.0	
OCDD	DL= 16.8	8.50	50.0	
2,3,7,8-TCDF	DL= 3.61	0.733	5.00	
12378-PeCDF	DL= 6.06	2.96	25.0	
23478-PeCDF	DL= 5.76	5.40	25.0	
123478-HxCDF	DL= 6.01	3.93	25.0	
123678-HxCDF	DL= 5.46	2.94	25.0	
234678-HxCDF	DL= 6.17	4.32	25.0	
123789-HxCDF	DL= 8.31	4.70	25.0	
1234678-HpCDF	DL= 6.49	4.24	25.0	
1234789-HpCDF	DL= 8.73	5.74	25.0	
OCDF	DL= 13.2	11.7	50.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 2.83	
Total PeCDD	DL= 3.52	
Total HxCDD	DL= 7.16	
Total HpCDD	DL= 7.70	
Total TCDF	DL= 3.61	
Total PeCDF	DL= 6.06	
Total HxCDF	DL= 8.31	
Total HpCDF	DL= 8.73	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	107	25-164	
13C-12378-PeCDD	86.4	25-181	
13C-123478-HxCDD	86.5	32-141	
13C-123678-HxCDD	91.2	28-130	
13C-1234678-HpCDD	77.1	23-140	
13C-OCDD	49.9	17-157	
13C-2378-TCDF	90.3	24-169	
13C-12378-PeCDF	72.0	24-185	
13C-23478-PeCDF	68.6	21-178	
13C-123478-HxCDF	87.6	26-152	
13C-123678-HxCDF	95.6	26-123	
13C-234678-HxCDF	79.6	28-136	
13C-123789-HxCDF	72.0	29-147	
13C-1234678-HpCDF	63.0	28-143	
13C-1234789-HpCDF	57.6	26-138	

CRS

37Cl4-2378-TCDD	83.5	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery		Date Received: NA
	QC Batch #: 1845	Date Extracted: 8/22/2018
	Matrix: Waste Water	ZB-5MS Analysis: 8/23/2018
Project ID: A8H1776	Sample Size: 1.000 L	

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	9.26	6.7-15.8	13C-2378-TCDD	102	20-175
12378-PeCDD	46.5	35-71	13C-12378-PeCDD	76.7	21-227
123478-HxCDD	47.1	35-82	13C-123478-HxCDD	86.0	21-193
123678-HxCDD	50.1	38-67	13C-123678-HxCDD	86.5	25-163
123789-HxCDD	52.1	32-81	13C-1234678-HpCDD	71.6	26-166
1234678-HpCDD	46.5	35-70	13C-OCDD	50.6	13-198
OCDD	97.8	78-144	13C-2378-TCDF	82.2	22-152
2,3,7,8-TCDF	8.68	7.5-15.8	13C-12378-PeCDF	69.0	21-192
12378-PeCDF	43.9	40-67	13C-23478-PeCDF	70.7	13-328
23478-PeCDF	41.2	34-80	13C-123478-HxCDF	80.5	19-202
123478-HxCDF	45.5	36-67	13C-123678-HxCDF	87.2	21-159
123678-HxCDF	43.4	42-65	13C-234678-HxCDF	76.4	22-176
234678-HxCDF	42.3	35-78	13C-123789-HxCDF	71.3	17-205
123789-HxCDF	43.7	39-65	13C-1234678-HpCDF	60.3	21-158
1234678-HpCDF	42.9	41-61	13C-1234789-HpCDF	52.7	20-186
1234789-HpCDF	42.0	39-69			
OCDF	73.1	63-170			
			CRS		
			37Cl4-2378-TCDD	91.1	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH

Reviewed by: BS

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Brine A8H1776-01		
Project ID: A8H1776	**Ceres Sample ID:** 12293-001	**Date Received:** 8/17/2018
	QC Batch #: 1845	**Date Extracted:** 8/22/2018
Date Collected: 8/13/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 8/24/2018
Time Collected: 10:00	**Sample Size:** 0.961 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 4.45	0.887	5.20	
12378-PeCDD	DL= 6.36	2.56	26.0	
123478-HxCDD	DL= 13.8	3.08	26.0	
123678-HxCDD	DL= 15.5	5.29	26.0	
123789-HxCDD	DL= 14.3	13.1	26.0	
1234678-HpCDD	DL= 12.3	5.15	26.0	
OCDD	DL= 32.7	8.50	52.0	
2,3,7,8-TCDF	DL= 4.29	0.733	5.20	
12378-PeCDF	DL= 7.12	2.96	26.0	
23478-PeCDF	DL= 5.85	5.40	26.0	
123478-HxCDF	DL= 11.1	3.93	26.0	
123678-HxCDF	DL= 9.90	2.94	26.0	
234678-HxCDF	DL= 9.98	4.32	26.0	
123789-HxCDF	DL= 13.5	4.70	26.0	
1234678-HpCDF	DL= 10.2	4.24	26.0	
1234789-HpCDF	DL= 16.2	5.74	26.0	
OCDF	DL= 23.9	11.7	52.0	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.45	
Total PeCDD	DL= 6.36	
Total HxCDD	DL= 15.5	
Total HpCDD	DL= 12.3	
Total TCDF	DL= 4.29	
Total PeCDF	DL= 7.12	
Total HxCDF	DL= 13.5	
Total HpCDF	DL= 16.2	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	64.6	25-164	
13C-12378-PeCDD	54.0	25-181	
13C-123478-HxCDD	61.7	32-141	
13C-123678-HxCDD	62.3	28-130	
13C-1234678-HpCDD	46.5	23-140	
13C-OCDD	23.4	17-157	
13C-2378-TCDF	66.0	24-169	
13C-12378-PeCDF	47.4	24-185	
13C-23478-PeCDF	51.0	21-178	
13C-123478-HxCDF	53.8	26-152	
13C-123678-HxCDF	60.0	26-123	
13C-234678-HxCDF	55.7	28-136	
13C-123789-HxCDF	45.0	29-147	
13C-1234678-HpCDF	43.7	28-143	
13C-1234789-HpCDF	33.5	26-138	

CRS

37Cl4-2378-TCDD	97.7	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H1776

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I II III IV

Sample ID	Samp Desc		Sample Date
A8H1776-01	R/O Brine	Client Matrix Water	08/13/2018 10:00

Lab Matrix: Water

H

Analysis: 1 2 AG WDNG

EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners

Released By	Date	Received By	Date
	8.16.18		8/17/18 11:18
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: JL (initials)

Ceres ID: 12293		Date/Time: 8/17/18 11:50
Client Project ID: A8H1776		Received Temp: 2.8 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?		(Y) / N
Chain of Custody Received by signed?		(Y) N
Custody Seals?	Present?	Y / N
	Intact?	Y / N
	NA:	(NA)
Unlabeled / Illegible Samples		Y / (N)
Proper Containers:		(Y) / N
Preservation Acceptable (Chemical or Temperature)?		(Y) / N
Drinking Water, Sodium Thiosulfate present?		Y (N) / NA
Residual Cl?		Y / (N)
Aqueous sample pH: 7, 6-5		

List COC discrepancies:

JL 8/17/18

List Damaged Samples:

JL 8/17/18

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A8H3934
10/04/2018
Invoice: A829234

Caitlin Galloway
Abalone Coast Analytical, Inc.
141 Suburban, Suite C-1
San Luis Obispo, CA 93401

RE: Report for A8H3934 Main Project - e COC

Dear Caitlin Galloway,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 8/29/2018. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

This certificate of analysis shall not be reproduced except in full, without written approval of the laboratory.

If additional clarification of any information is required, please contact your Project Manager, Michelle Kawaguchi , at 559-497-2888.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

True Lee, Project Manager

Accredited in Accordance with NELAP
ORELAP #4021-009

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	Abalone Coast Analytical, Inc.	**Invoice To:**	Abalone Coast Analytical, Inc.
Report To:	Caitlin Galloway	**Invoice Attn:**	Caitlin Galloway
Project #:	18-5470 City of Pismo Beach	**Project PO#:**	-
Received:	8/29/2018 - 12:00		
Report Due:	9/17/2018		

Sample Receipt Conditions

Cooler: Cooler #2
Temperature on Receipt ºC: 2.9

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Cooler: Default Cooler
Temperature on Receipt ºC: 3.6

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

BS	Blank spike recoveries did not meet acceptance limits.
BS1.0	Blank spike recovery for this analyte was biased high; no material impact on reported result as sample is ND for this parameter.
BS2.0	Blank spike recovery for this analyte was biased low. Associated result may be biased low; reanalysis not feasible.
BS3.0	BS/BSD RPD exceeded the acceptance limit. Recovery met acceptance criteria.
CV0.0	CCV recovery was above method acceptance limits; no material impact on reported result as sample is ND for this parameter.
DL1.0	Sample required a dilution due to the matrix or high concentration of a non-target analyte.
J	Estimated value
MS1.0	Matrix spike recoveries exceed control limits.
SR1.1	Surrogate recovery exceeds upper control limit due to matrix interference as confirmed by re-analysis. Associated results should be considered biased high.
SR1.2	Surrogate recovery exceeds upper control limit due to obvious matrix interference. Associated results should be considered biased high.

Report Distribution

Recipient(s)	Report Format	CC:
Caitlin Galloway (reports)	FINAL.RPT	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H3934-01
Sampled By: Lauren Herrick
Sample Description: R/O Brine

Sample Date - Time: 08/28/18 - 09:45
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**8.5**		0.30	ug/L	3	A812977	09/04/18	09/06/18	
Copper	EPA 200.8 DRC	**24**		1.1	ug/L	1	A812977	09/04/18	09/05/18	
Nickel	EPA 200.8 DRC	**23**		1.0	ug/L	1	A812977	09/04/18	09/05/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD									**Analysis Qualifier(s):**	**DL1.0**
4,4'-DDD	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
4,4'-DDE	EPA 608	ND	0.012	0.10	ug/L	20	A812910	08/31/18	09/04/18	
4,4'-DDT	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Aldrin	EPA 608	ND	0.016	0.10	ug/L	20	A812910	08/31/18	09/04/18	
alpha-BHC	EPA 608	ND	0.050	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1016	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1221	EPA 608	ND	1.3	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1232	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1242	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1248	EPA 608	ND	0.40	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1254	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1260	EPA 608	ND	0.30	2.0	ug/L	20	A812910	08/31/18	09/04/18	
beta-BHC	EPA 608	ND	0.011	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Chlordane	EPA 608	ND	0.52	2.0	ug/L	20	A812910	08/31/18	09/04/18	
delta-BHC	EPA 608	ND	0.012	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Dieldrin	EPA 608	ND	0.019	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endosulfan I	EPA 608	ND	0.018	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endosulfan II	EPA 608	ND	0.036	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endosulfan Sulfate	EPA 608	ND	0.015	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endrin	EPA 608	ND	0.016	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endrin Aldehyde	EPA 608	ND	0.013	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Heptachlor	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Heptachlor Epoxide	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Lindane	EPA 608	ND	0.050	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Toxaphene	EPA 608	ND	0.70	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Surrogate: TCMX	EPA 608	80 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H3934-01
Sampled By: Lauren Herrick
Sample Description: R/O Brine

Sample Date - Time: 08/28/18 - 09:45
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
2-Butanone	EPA 624	**1.3**	1.2	20	ug/L	1	A812435	08/29/18	08/30/18	J
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A812435	08/29/18	08/30/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A812435	08/29/18	08/30/18	
Acetone	EPA 624	**6.9**	1.4	20	ug/L	1	A812435	08/29/18	08/30/18	J
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Bromodichloromethane	EPA 624	**1.1**	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A812435	08/29/18	08/30/18	
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A812435	08/29/18	08/30/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chloroform	EPA 624	**3.4**	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chloromethane	EPA 624	**0.45**	0.18	0.50	ug/L	1	A812435	08/29/18	08/30/18	J
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Dibromochloromethane	EPA 624	**0.19**	0.085	0.50	ug/L	1	A812435	08/29/18	08/30/18	J
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A812435	08/29/18	08/30/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Ethylbenzene	EPA 624	**0.16**	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	J
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A812435	08/29/18	08/30/18	
m,p-Xylenes	EPA 624	**0.57**	0.22	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A812435	08/29/18	08/30/18	
o-Xylene	EPA 624	**0.41**	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	J
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A812435	08/29/18	08/30/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	BS1.0
Toluene	EPA 624	**0.18**	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	J
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	106 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	103 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	96 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										**Analysis Qualifier(s): DL1.0**
1,2,4-Trichlorobenzene	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.70	10	ug/L	5	A812742	08/29/18	09/06/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H3934-01
Sampled By: Lauren Herrick
Sample Description: R/O Brine

Sample Date - Time: 08/28/18 - 09:45
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS									**Analysis Qualifier(s):**	**DL1.0**
2,4-Dichlorophenol	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
2,4-Dimethylphenol	EPA 625	ND	0.76	2.5	ug/L	5	A812742	08/29/18	09/06/18	
2,4-Dinitrophenol	EPA 625	ND	1.4	5.0	ug/L	5	A812742	08/29/18	09/06/18	
2,4-Dinitrotoluene	EPA 625	ND	0.50	5.0	ug/L	5	A812742	08/29/18	09/06/18	
2,6-Dinitrotoluene	EPA 625	ND	1.8	5.0	ug/L	5	A812742	08/29/18	09/06/18	
2-Chloronaphthalene	EPA 625	ND	0.50	10	ug/L	5	A812742	08/29/18	09/06/18	
2-Chlorophenol	EPA 625	ND	0.56	2.5	ug/L	5	A812742	08/29/18	09/06/18	
2-Nitrophenol	EPA 625	ND	1.1	10	ug/L	5	A812742	08/29/18	09/06/18	
3,3-Dichlorobenzidine	EPA 625	ND	2.7	10	ug/L	5	A812742	08/29/18	09/06/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.53	5.0	ug/L	5	A812742	08/29/18	09/06/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.50	5.0	ug/L	5	A812742	08/29/18	09/06/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	1.2	5.0	ug/L	5	A812742	08/29/18	09/06/18	
4-Nitrophenol	EPA 625	ND	1.3	5.0	ug/L	5	A812742	08/29/18	09/06/18	
Acenaphthene	EPA 625	ND	0.020	0.50	ug/L	5	A812742	08/29/18	09/06/18	
Acenaphthylene	EPA 625	ND	0.011	0.20	ug/L	5	A812742	08/29/18	09/06/18	
Anthracene	EPA 625	ND	0.0098	2.0	ug/L	5	A812742	08/29/18	09/06/18	
Benzidine	EPA 625	ND	7.0	25	ug/L	5	A812742	08/29/18	09/06/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.011	5.0	ug/L	5	A812742	08/29/18	09/06/18	
Benzo(a)pyrene	EPA 625	ND	0.016	2.0	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Benzo(b)fluoranthene	EPA 625	ND	0.010	10	ug/L	5	A812742	08/29/18	09/06/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.019	0.10	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Benzo(k)fluoranthene	EPA 625	ND	0.014	2.0	ug/L	5	A812742	08/29/18	09/06/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.50	5.0	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Bis(2-chloroethyl) ether	EPA 625	ND	0.74	2.5	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.63	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	1.5	5.0	ug/L	5	A812742	08/29/18	09/06/18	
Butyl benzyl phthalate	EPA 625	ND	0.50	10	ug/L	5	A812742	08/29/18	09/06/18	
Chrysene	EPA 625	ND	0.0057	5.0	ug/L	5	A812742	08/29/18	09/06/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.016	0.10	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Diethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Dimethyl phthalate	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Di-n-butyl phthalate	EPA 625	ND	0.68	10	ug/L	5	A812742	08/29/18	09/06/18	
Di-n-octyl phthalate	EPA 625	ND	0.53	10	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Fluoranthene	EPA 625	ND	0.0061	0.050	ug/L	5	A812742	08/29/18	09/06/18	
Fluorene	EPA 625	ND	0.022	0.10	ug/L	5	A812742	08/29/18	09/06/18	
Hexachlorobenzene	EPA 625	ND	0.76	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Hexachlorobutadiene	EPA 625	ND	0.67	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.68	5.0	ug/L	5	A812742	08/29/18	09/06/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.013	0.050	ug/L	5	A812742	08/29/18	09/06/18	CV0.0
Isophorone	EPA 625	ND	0.57	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Naphthalene	EPA 625	ND	0.014	0.20	ug/L	5	A812742	08/29/18	09/06/18	
Nitrobenzene	EPA 625	ND	0.53	2.5	ug/L	5	A812742	08/29/18	09/06/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	2.4	5.0	ug/L	5	A812742	08/29/18	09/06/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H3934-01
Sampled By: Lauren Herrick
Sample Description: R/O Brine

Sample Date - Time: 08/28/18 - 09:45
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS									**Analysis Qualifier(s):**	**DL1.0**
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.51	5.0	ug/L	5	A812742	08/29/18	09/06/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	1.2	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Pentachlorophenol	EPA 625	ND	1.0	5.0	ug/L	5	A812742	08/29/18	09/06/18	
Phenanthrene	EPA 625	ND	0.012	0.050	ug/L	5	A812742	08/29/18	09/06/18	
Phenol	EPA 625	ND	0.50	2.5	ug/L	5	A812742	08/29/18	09/06/18	
Pyrene	EPA 625	ND	0.0072	0.050	ug/L	5	A812742	08/29/18	09/06/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	175 %		*Acceptable range: 53-200 %*						
Surrogate: 2-Fluorobiphenyl	EPA 625	86 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	103 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	97 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	98 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	87 %		*Acceptable range: 39-135 %*						

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H3934-02
Sampled By: Lauren Herrick
Sample Description: R/O Feed Water

Sample Date - Time: 08/28/18 - 10:01
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

Metals

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic	EPA 200.8 DRC	**1.6**		0.30	ug/L	3	A812977	09/04/18	09/06/18	
Copper	EPA 200.8 DRC	**6.9**		1.1	ug/L	1	A812977	09/04/18	09/05/18	
Nickel	EPA 200.8 DRC	**5.1**		1.0	ug/L	1	A812977	09/04/18	09/05/18	

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Organochlorine Pesticides and PCBs by GC-ECD									**Analysis Qualifier(s):**	**DL1.0**
4,4'-DDD	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
4,4'-DDE	EPA 608	ND	0.012	0.10	ug/L	20	A812910	08/31/18	09/04/18	
4,4'-DDT	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Aldrin	EPA 608	ND	0.016	0.10	ug/L	20	A812910	08/31/18	09/04/18	
alpha-BHC	EPA 608	ND	0.050	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1016	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1221	EPA 608	ND	1.3	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1232	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1242	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1248	EPA 608	ND	0.40	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1254	EPA 608	ND	1.0	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Aroclor-1260	EPA 608	ND	0.30	2.0	ug/L	20	A812910	08/31/18	09/04/18	
beta-BHC	EPA 608	ND	0.011	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Chlordane	EPA 608	ND	0.52	2.0	ug/L	20	A812910	08/31/18	09/04/18	
delta-BHC	EPA 608	ND	0.012	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Dieldrin	EPA 608	ND	0.019	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endosulfan I	EPA 608	ND	0.018	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endosulfan II	EPA 608	ND	0.036	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endosulfan Sulfate	EPA 608	ND	0.015	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endrin	EPA 608	ND	0.016	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Endrin Aldehyde	EPA 608	ND	0.013	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Heptachlor	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Heptachlor Epoxide	EPA 608	ND	0.014	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Lindane	EPA 608	ND	0.050	0.10	ug/L	20	A812910	08/31/18	09/04/18	
Toxaphene	EPA 608	ND	0.70	2.0	ug/L	20	A812910	08/31/18	09/04/18	
Surrogate: TCMX	EPA 608	92 %		*Acceptable range: 26-144 %*						
Volatile Organics by GC-MS										
Total Xylenes	EPA 624	ND		1.0	ug/L					
Volatile Organics by GC-MS										
1,1,1-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1,2,2-Tetrachloroethane	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1,2-Trichloroethane	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1-Dichloroethane	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,1-Dichloroethene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,2-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Sample ID: A8H3934-02
Sampled By: Lauren Herrick
Sample Description: R/O Feed Water

Sample Date - Time: 08/28/18 - 10:01
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS										
1,2-Dichloroethane	EPA 624	ND	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,2-Dichloropropane	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,3-Dichlorobenzene	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
1,4-Dichlorobenzene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
2-Butanone	EPA 624	ND	1.2	20	ug/L	1	A812435	08/29/18	08/30/18	
2-Hexanone	EPA 624	ND	1.2	20	ug/L	1	A812435	08/29/18	08/30/18	
4-Methyl-2-pentanone	EPA 624	ND	0.97	20	ug/L	1	A812435	08/29/18	08/30/18	
Acetone	EPA 624	ND	1.4	20	ug/L	1	A812435	08/29/18	08/30/18	
Benzene	EPA 624	ND	0.15	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Bromodichloromethane	EPA 624	**0.38**	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	J
Bromoform	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Bromomethane	EPA 624	ND	0.19	1.0	ug/L	1	A812435	08/29/18	08/30/18	
Carbon disulfide	EPA 624	ND	1.6	50	ug/L	1	A812435	08/29/18	08/30/18	
Carbon Tetrachloride	EPA 624	ND	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chlorobenzene	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chloroethane	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chloroform	EPA 624	**2.9**	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Chloromethane	EPA 624	**0.79**	0.18	0.50	ug/L	1	A812435	08/29/18	08/30/18	
cis-1,2-Dichloroethene	EPA 624	ND	0.10	0.50	ug/L	1	A812435	08/29/18	08/30/18	
cis-1,3-Dichloropropene	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Dibromochloromethane	EPA 624	ND	0.085	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Dichlorodifluoromethane	EPA 624	ND	0.11	1.0	ug/L	1	A812435	08/29/18	08/30/18	
Dichloromethane	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Ethylbenzene	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Hexachloroethane	EPA 624	ND	0.15	1.0	ug/L	1	A812435	08/29/18	08/30/18	
m,p-Xylenes	EPA 624	ND	0.22	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Methyl-t-butyl ether	EPA 624	ND	0.22	0.50	ug/L	1	A812435	08/29/18	08/30/18	
o-Xylene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Styrene	EPA 624	ND	0.16	5.0	ug/L	1	A812435	08/29/18	08/30/18	
Tetrachloroethene (PCE)	EPA 624	ND	0.11	0.50	ug/L	1	A812435	08/29/18	08/30/18	BS1.0
Toluene	EPA 624	ND	0.14	0.50	ug/L	1	A812435	08/29/18	08/30/18	
trans-1,2-Dichloroethene	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
trans-1,3-Dichloropropene	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Trichloroethene (TCE)	EPA 624	ND	0.13	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Trichlorofluoromethane	EPA 624	ND	0.12	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Vinyl Chloride	EPA 624	ND	0.15	0.50	ug/L	1	A812435	08/29/18	08/30/18	
Surrogate: 1,2-Dichloroethane-d4	EPA 624	103 %		*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 624	99 %		*Acceptable range: 70-130 %*						
Surrogate: Toluene-d8	EPA 624	99 %		*Acceptable range: 70-130 %*						
Caltox Semi-Volatile Organics by GC-MS										
1,2,4-Trichlorobenzene	EPA 625	ND	0.10	1.0	ug/L	1	A812742	08/29/18	09/06/18	
1,2-Diphenylhydrazine (as Azobenzene)	EPA 625	ND	0.10	1.0	ug/L	1	A812742	08/29/18	09/06/18	
2,4,6-Trichlorophenol	EPA 625	ND	0.14	10	ug/L	1	A812742	08/29/18	09/06/18	

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Certificate of Analysis

Sample ID: A8H3934-02
Sampled By: Lauren Herrick
Sample Description: R/O Feed Water

Sample Date - Time: 08/28/18 - 10:01
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
2,4-Dichlorophenol	EPA 625	ND	0.10	1.0	ug/L	1	A812742	08/29/18	09/06/18	
2,4-Dimethylphenol	EPA 625	ND	0.15	1.0	ug/L	1	A812742	08/29/18	09/06/18	
2,4-Dinitrophenol	EPA 625	ND	0.27	5.0	ug/L	1	A812742	08/29/18	09/06/18	
2,4-Dinitrotoluene	EPA 625	ND	0.10	5.0	ug/L	1	A812742	08/29/18	09/06/18	
2,6-Dinitrotoluene	EPA 625	ND	0.36	5.0	ug/L	1	A812742	08/29/18	09/06/18	
2-Chloronaphthalene	EPA 625	ND	0.10	10	ug/L	1	A812742	08/29/18	09/06/18	
2-Chlorophenol	EPA 625	ND	0.11	2.0	ug/L	1	A812742	08/29/18	09/06/18	
2-Nitrophenol	EPA 625	ND	0.21	10	ug/L	1	A812742	08/29/18	09/06/18	
3,3-Dichlorobenzidine	EPA 625	ND	0.54	5.0	ug/L	1	A812742	08/29/18	09/06/18	
4,6-Dinitro-2-methylphenol	EPA 625	ND	0.11	5.0	ug/L	1	A812742	08/29/18	09/06/18	
4-Bromophenyl phenyl ether	EPA 625	ND	0.10	5.0	ug/L	1	A812742	08/29/18	09/06/18	
4-Chloro-3-methylphenol	EPA 625	ND	0.10	1.0	ug/L	1	A812742	08/29/18	09/06/18	
4-Chlorophenyl phenyl ether	EPA 625	ND	0.23	5.0	ug/L	1	A812742	08/29/18	09/06/18	
4-Nitrophenol	EPA 625	ND	0.26	5.0	ug/L	1	A812742	08/29/18	09/06/18	
Acenaphthene	EPA 625	ND	0.0040	0.50	ug/L	1	A812742	08/29/18	09/06/18	
Acenaphthylene	EPA 625	ND	0.0023	0.20	ug/L	1	A812742	08/29/18	09/06/18	
Anthracene	EPA 625	ND	0.0020	2.0	ug/L	1	A812742	08/29/18	09/06/18	
Benzidine	EPA 625	ND	1.4	5.0	ug/L	1	A812742	08/29/18	09/06/18	BS2.0
Benzo(a)anthracene	EPA 625	ND	0.0023	5.0	ug/L	1	A812742	08/29/18	09/06/18	
Benzo(a)pyrene	EPA 625	ND	0.0033	2.0	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Benzo(b)fluoranthene	EPA 625	ND	0.0021	10	ug/L	1	A812742	08/29/18	09/06/18	
Benzo(g,h,i)perylene	EPA 625	ND	0.0039	0.10	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Benzo(k)fluoranthene	EPA 625	ND	0.0028	2.0	ug/L	1	A812742	08/29/18	09/06/18	
Bis(2-chloroethoxy)methane	EPA 625	ND	0.10	5.0	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Bis(2-chloroethyl) ether	EPA 625	ND	0.15	1.0	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Bis(2-chloroisopropyl) ether	EPA 625	ND	0.13	2.0	ug/L	1	A812742	08/29/18	09/06/18	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	0.29	5.0	ug/L	1	A812742	08/29/18	09/06/18	
Butyl benzyl phthalate	EPA 625	ND	0.10	10	ug/L	1	A812742	08/29/18	09/06/18	
Chrysene	EPA 625	ND	0.0011	5.0	ug/L	1	A812742	08/29/18	09/06/18	
Dibenzo(a,h)anthracene	EPA 625	ND	0.0031	0.10	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Diethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A812742	08/29/18	09/06/18	
Dimethyl phthalate	EPA 625	ND	0.10	2.0	ug/L	1	A812742	08/29/18	09/06/18	
Di-n-butyl phthalate	EPA 625	ND	0.14	10	ug/L	1	A812742	08/29/18	09/06/18	
Di-n-octyl phthalate	EPA 625	ND	0.11	10	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Fluoranthene	EPA 625	ND	0.0012	0.050	ug/L	1	A812742	08/29/18	09/06/18	
Fluorene	EPA 625	ND	0.0043	0.10	ug/L	1	A812742	08/29/18	09/06/18	
Hexachlorobenzene	EPA 625	ND	0.15	1.0	ug/L	1	A812742	08/29/18	09/06/18	
Hexachlorobutadiene	EPA 625	ND	0.13	1.0	ug/L	1	A812742	08/29/18	09/06/18	
Hexachlorocyclopentadiene	EPA 625	ND	0.14	5.0	ug/L	1	A812742	08/29/18	09/06/18	
Indeno(1,2,3-cd)pyrene	EPA 625	ND	0.0027	0.050	ug/L	1	A812742	08/29/18	09/06/18	CV0.0
Isophorone	EPA 625	ND	0.11	1.0	ug/L	1	A812742	08/29/18	09/06/18	
Naphthalene	EPA 625	ND	0.0027	0.20	ug/L	1	A812742	08/29/18	09/06/18	
Nitrobenzene	EPA 625	ND	0.11	1.0	ug/L	1	A812742	08/29/18	09/06/18	
N-Nitrosodimethylamine (NDMA)	EPA 625	ND	0.48	5.0	ug/L	1	A812742	08/29/18	09/06/18	

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Certificate of Analysis

Sample ID: A8H3934-02
Sampled By: Lauren Herrick
Sample Description: R/O Feed Water

Sample Date - Time: 08/28/18 - 10:01
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Caltox Semi-Volatile Organics by GC-MS										
N-Nitrosodi-n-propylamine (NDPA)	EPA 625	ND	0.10	5.0	ug/L	1	A812742	08/29/18	09/06/18	
N-Nitrosodiphenylamine (as DPA)	EPA 625	ND	0.24	1.0	ug/L	1	A812742	08/29/18	09/06/18	
Pentachlorophenol	EPA 625	ND	0.20	1.0	ug/L	1	A812742	08/29/18	09/06/18	
Phenanthrene	EPA 625	ND	0.0024	0.050	ug/L	1	A812742	08/29/18	09/06/18	
Phenol	EPA 625	ND	0.10	1.0	ug/L	1	A812742	08/29/18	09/06/18	
Pyrene	EPA 625	ND	0.0014	0.050	ug/L	1	A812742	08/29/18	09/06/18	
Surrogate: 2,4,6-Tribromophenol	EPA 625	200 %		*Acceptable range: 53-200 %*						
Surrogate: 2-Fluorobiphenyl	EPA 625	93 %		*Acceptable range: 40-127 %*						
Surrogate: 2-Fluorophenol	EPA 625	111 %		*Acceptable range: 42-123 %*						
Surrogate: Nitrobenzene-d5	EPA 625	98 %		*Acceptable range: 49-133 %*						
Surrogate: Phenol-d6	EPA 625	105 %		*Acceptable range: 52-125 %*						
Surrogate: p-Terphenyl-d14	EPA 625	100 %		*Acceptable range: 39-135 %*						

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Metals Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 DRC - Quality Control												
Batch: A812977											Prepared: 9/4/2018	
Prep Method: EPA 200.2 DRC											Analyst: PSK	
Blank (A812977-BLK1)												
Copper	ND		1.1	ug/L							09/05/18	
Nickel	ND		1.0	ug/L							09/05/18	
Blank (A812977-BLK2)												
Arsenic	ND		0.10	ug/L							09/06/18	
Blank Spike (A812977-BS1)												
Copper	50		1.1	ug/L	50	ND	100	85-115			09/05/18	
Nickel	50		1.0	ug/L	50	ND	100	85-115			09/05/18	
Blank Spike (A812977-BS2)												
Arsenic	47		0.10	ug/L	50	ND	94	85-115			09/06/18	
Blank Spike Dup (A812977-BSD1)												
Copper	50		1.1	ug/L	50	ND	100	85-115	0	20	09/05/18	
Nickel	50		1.0	ug/L	50	ND	101	85-115	1	20	09/05/18	
Blank Spike Dup (A812977-BSD2)												
Arsenic	47		0.10	ug/L	50	ND	94	85-115	0	20	09/06/18	
Matrix Spike (A812977-MS1), Source: A8H4221-01												
Copper	48		1.1	ug/L	50	1.1	94	70-130			09/05/18	
Nickel	50		1.0	ug/L	50	1.3	97	70-130			09/05/18	
Matrix Spike (A812977-MS2), Source: A8H4221-01												
Arsenic	51		0.10	ug/L	50	2.4	96	70-130			09/06/18	
Matrix Spike Dup (A812977-MSD1), Source: A8H4221-01												
Copper	47		1.1	ug/L	50	1.1	92	70-130	2	20	09/05/18	
Nickel	49		1.0	ug/L	50	1.3	95	70-130	2	20	09/05/18	
Matrix Spike Dup (A812977-MSD2), Source: A8H4221-01												
Arsenic	50		0.10	ug/L	50	2.4	95	70-130	1	20	09/06/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A812910											Prepared: 8/31/2018	
Prep Method: EPA 3510C											Analyst: VTL	
Blank (A812910-BLK1)												
4,4'-DDD	ND	0.00072	0.050	ug/L							09/04/18	
4,4'-DDE	ND	0.00061	0.050	ug/L							09/04/18	
4,4'-DDT	ND	0.00070	0.010	ug/L							09/04/18	
Aldrin	ND	0.00079	0.0050	ug/L							09/04/18	
alpha-BHC	ND	0.0025	0.010	ug/L							09/04/18	
Aroclor-1016	ND	0.050	0.50	ug/L							09/04/18	
Aroclor-1221	ND	0.063	0.50	ug/L							09/04/18	
Aroclor-1232	ND	0.050	0.50	ug/L							09/04/18	
Aroclor-1242	ND	0.050	0.50	ug/L							09/04/18	
Aroclor-1248	ND	0.020	0.50	ug/L							09/04/18	
Aroclor-1254	ND	0.050	0.50	ug/L							09/04/18	
Aroclor-1260	ND	0.015	0.50	ug/L							09/04/18	
beta-BHC	ND	0.00054	0.0050	ug/L							09/04/18	
Chlordane	ND	0.026	0.10	ug/L							09/04/18	
delta-BHC	ND	0.00060	0.0050	ug/L							09/04/18	
Dieldrin	ND	0.00097	0.010	ug/L							09/04/18	
Endosulfan I	ND	0.00089	0.020	ug/L							09/04/18	
Endosulfan II	ND	0.0018	0.010	ug/L							09/04/18	
Endosulfan Sulfate	ND	0.00074	0.050	ug/L							09/04/18	
Endrin	ND	0.00081	0.010	ug/L							09/04/18	
Endrin Aldehyde	ND	0.00067	0.010	ug/L							09/04/18	
Heptachlor	ND	0.00069	0.010	ug/L							09/04/18	
Heptachlor Epoxide	ND	0.00069	0.010	ug/L							09/04/18	
Lindane	ND	0.0025	0.020	ug/L							09/04/18	
Toxaphene	ND	0.035	0.50	ug/L							09/04/18	
Surrogate: TCMX	*0.27*				*0.30*		*91*	*26-144*			09/04/18	
Blank Spike (A812910-BS1)												
4,4'-DDD	0.040	0.00072	0.050	ug/L	0.040		100	63-146			09/04/18	J
4,4'-DDE	0.041	0.00061	0.050	ug/L	0.040		103	49-150			09/04/18	J
4,4'-DDT	0.037	0.00070	0.010	ug/L	0.040		92	66-146			09/04/18	
Aldrin	0.037	0.00079	0.0050	ug/L	0.040		92	24-144			09/04/18	
alpha-BHC	0.034	0.0025	0.010	ug/L	0.040		84	32-176			09/04/18	
beta-BHC	0.039	0.00054	0.0050	ug/L	0.040		98	59-152			09/04/18	
delta-BHC	0.034	0.00060	0.0050	ug/L	0.040		86	46-156			09/04/18	
Dieldrin	0.039	0.00097	0.010	ug/L	0.040		96	62-146			09/04/18	
Endosulfan I	0.039	0.00089	0.020	ug/L	0.040		96	53-151			09/04/18	
Endosulfan II	0.039	0.0018	0.010	ug/L	0.040		97	63-144			09/04/18	
Endosulfan Sulfate	0.037	0.00074	0.050	ug/L	0.040		92	65-145			09/04/18	J
Endrin	0.043	0.00081	0.010	ug/L	0.040		108	55-153			09/04/18	
Endrin Aldehyde	0.034	0.00067	0.010	ug/L	0.040		85	68-128			09/04/18	
Heptachlor	0.045	0.00069	0.010	ug/L	0.040		113	34-147			09/04/18	
Heptachlor Epoxide	0.038	0.00069	0.010	ug/L	0.040		96	57-150			09/04/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 608 - Quality Control												
Batch: A812910											Prepared: 8/31/2018	
Prep Method: EPA 3510C											Analyst: VTL	
Blank Spike (A812910-BS1)												
Lindane	0.036	0.0025	0.020	ug/L	0.040		90	58-148			09/04/18	
Surrogate: TCMX	*0.28*				*0.30*		*95*	*26-144*			09/04/18	
Blank Spike Dup (A812910-BSD1)												
4,4'-DDD	0.040	0.00072	0.050	ug/L	0.040		100	63-146	0	20	09/04/18	J
4,4'-DDE	0.040	0.00061	0.050	ug/L	0.040		100	49-150	3	20	09/04/18	J
4,4'-DDT	0.038	0.00070	0.010	ug/L	0.040		96	66-146	4	20	09/04/18	
Aldrin	0.039	0.00079	0.0050	ug/L	0.040		98	24-144	6	20	09/04/18	
alpha-BHC	0.036	0.0025	0.010	ug/L	0.040		91	32-176	7	20	09/04/18	
beta-BHC	0.039	0.00054	0.0050	ug/L	0.040		98	59-152	0	20	09/04/18	
delta-BHC	0.035	0.00060	0.0050	ug/L	0.040		87	46-156	2	20	09/04/18	
Dieldrin	0.040	0.00097	0.010	ug/L	0.040		100	62-146	4	20	09/04/18	
Endosulfan I	0.040	0.00089	0.020	ug/L	0.040		100	53-151	4	20	09/04/18	
Endosulfan II	0.041	0.0018	0.010	ug/L	0.040		102	63-144	5	20	09/04/18	
Endosulfan Sulfate	0.037	0.00074	0.050	ug/L	0.040		94	65-145	2	20	09/04/18	J
Endrin	0.044	0.00081	0.010	ug/L	0.040		111	55-153	3	20	09/04/18	
Endrin Aldehyde	0.036	0.00067	0.010	ug/L	0.040		89	68-128	5	20	09/04/18	
Heptachlor	0.045	0.00069	0.010	ug/L	0.040		113	34-147	0	20	09/04/18	
Heptachlor Epoxide	0.040	0.00069	0.010	ug/L	0.040		100	57-150	4	20	09/04/18	
Lindane	0.038	0.0025	0.020	ug/L	0.040		94	58-148	5	20	09/04/18	
Surrogate: TCMX	*0.28*				*0.30*		*94*	*26-144*			09/04/18	
Matrix Spike (A812910-MS1), Source: A8H3711-01												
4,4'-DDD	0.038	0.00072	0.050	ug/L	0.038	ND	100	63-146			09/04/18	J
4,4'-DDE	0.039	0.00061	0.050	ug/L	0.038	ND	103	49-150			09/04/18	J
4,4'-DDT	0.025	0.00070	0.010	ug/L	0.038	ND	66	66-146			09/04/18	
Aldrin	0.033	0.00079	0.0050	ug/L	0.038	ND	87	24-144			09/04/18	
alpha-BHC	0.034	0.0025	0.010	ug/L	0.038	ND	89	32-176			09/04/18	
beta-BHC	0.036	0.00054	0.0050	ug/L	0.038	ND	94	59-152			09/04/18	
delta-BHC	0.035	0.00060	0.0050	ug/L	0.038	ND	91	46-156			09/04/18	
Dieldrin	0.035	0.00097	0.010	ug/L	0.038	ND	93	62-146			09/04/18	
Endosulfan I	0.037	0.00089	0.020	ug/L	0.038	ND	97	53-151			09/04/18	
Endosulfan II	0.036	0.0018	0.010	ug/L	0.038	ND	95	63-144			09/04/18	
Endosulfan Sulfate	0.034	0.00074	0.050	ug/L	0.038	ND	90	65-145			09/04/18	J
Endrin	0.043	0.00081	0.010	ug/L	0.038	ND	113	55-153			09/04/18	
Endrin Aldehyde	0.033	0.00067	0.010	ug/L	0.038	ND	86	68-128			09/04/18	
Heptachlor	0.047	0.00069	0.010	ug/L	0.038	ND	122	34-147			09/04/18	
Heptachlor Epoxide	0.036	0.00069	0.010	ug/L	0.038	ND	93	57-150			09/04/18	
Lindane	0.034	0.0025	0.020	ug/L	0.038	ND	89	58-148			09/04/18	
Surrogate: TCMX	*0.26*				*0.29*		*92*	*26-144*			09/04/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A812435											Prepared: 8/29/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank (A812435-BLK1)												
1,1,1-Trichloroethane	ND	0.14	0.50	ug/L							08/30/18	
1,1,2,2-Tetrachloroethane	ND	0.12	0.50	ug/L							08/30/18	
1,1,2-Trichloroethane	ND	0.14	0.50	ug/L							08/30/18	
1,1-Dichloroethane	ND	0.11	0.50	ug/L							08/30/18	
1,1-Dichloroethene	ND	0.12	0.50	ug/L							08/30/18	
1,2-Dichlorobenzene	ND	0.12	0.50	ug/L							08/30/18	
1,2-Dichloroethane	ND	0.10	0.50	ug/L							08/30/18	
1,2-Dichloropropane	ND	0.12	0.50	ug/L							08/30/18	
1,3-Dichlorobenzene	ND	0.11	0.50	ug/L							08/30/18	
1,4-Dichlorobenzene	ND	0.12	0.50	ug/L							08/30/18	
2-Butanone	ND	1.2	20	ug/L							08/30/18	
2-Hexanone	ND	1.2	20	ug/L							08/30/18	
4-Methyl-2-pentanone	ND	0.97	20	ug/L							08/30/18	
Acetone	ND	1.4	5.0	ug/L							08/30/18	
Benzene	ND	0.15	0.50	ug/L							08/30/18	
Bromodichloromethane	ND	0.10	0.50	ug/L							08/30/18	
Bromoform	ND	0.14	0.50	ug/L							08/30/18	
Bromomethane	0.33	0.19	1.0	ug/L							08/30/18	J
Carbon disulfide	ND	1.6	5.0	ug/L							08/30/18	
Carbon Tetrachloride	ND	0.10	0.50	ug/L							08/30/18	
Chlorobenzene	ND	0.13	0.50	ug/L							08/30/18	
Chloroethane	ND	0.13	0.50	ug/L							08/30/18	
Chloroform	ND	0.10	0.50	ug/L							08/30/18	
Chloromethane	ND	0.18	0.50	ug/L							08/30/18	
cis-1,2-Dichloroethene	ND	0.10	0.50	ug/L							08/30/18	
cis-1,3-Dichloropropene	ND	0.11	0.50	ug/L							08/30/18	
Dibromochloromethane	ND	0.085	0.50	ug/L							08/30/18	
Dichlorodifluoromethane	ND	0.11	1.0	ug/L							08/30/18	
Dichloromethane	ND	0.11	0.50	ug/L							08/30/18	
Ethylbenzene	ND	0.13	0.50	ug/L							08/30/18	
Hexachloroethane	ND	0.15	1.0	ug/L							08/30/18	
m,p-Xylenes	ND	0.22	0.50	ug/L							08/30/18	
Methyl-t-butyl ether	ND	0.22	0.50	ug/L							08/30/18	
o-Xylene	ND	0.12	0.50	ug/L							08/30/18	
Styrene	ND	0.16	0.50	ug/L							08/30/18	
Tetrachloroethene (PCE)	ND	0.11	0.50	ug/L							08/30/18	
Toluene	ND	0.14	0.50	ug/L							08/30/18	
trans-1,2-Dichloroethene	ND	0.13	0.50	ug/L							08/30/18	
trans-1,3-Dichloropropene	ND	0.12	0.50	ug/L							08/30/18	
Trichloroethene (TCE)	ND	0.13	0.50	ug/L							08/30/18	
Trichlorofluoromethane	ND	0.12	0.50	ug/L							08/30/18	
Vinyl Chloride	ND	0.15	0.50	ug/L							08/30/18	
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*102*	*70-130*			08/30/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 624 - Quality Control													
Batch: A812435											Prepared: 8/29/2018		
Prep Method: no prep-volatiles											Analyst: AMN		
Blank (A812435-BLK1)													
Surrogate: Bromofluorobenzene	*51*				*50*		*102*	*70-130*			08/30/18		
Surrogate: Toluene-d8	*48*				*50*		*96*	*70-130*			08/30/18		
Blank Spike (A812435-BS1)													
1,1,1-Trichloroethane	10	0.14	0.50	ug/L	10		104	52-162			08/29/18		
1,1,2,2-Tetrachloroethane	9.5	0.12	0.50	ug/L	10		95	46-157			08/29/18		
1,1,2-Trichloroethane	9.8	0.14	0.50	ug/L	10		98	52-150			08/29/18		
1,1-Dichloroethane	10	0.11	0.50	ug/L	10		102	59-155			08/29/18		
1,1-Dichloroethene	11	0.12	0.50	ug/L	10		107	10-234			08/29/18		
1,2-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190			08/29/18		
1,2-Dichloroethane	9.9	0.10	0.50	ug/L	10		99	49-155			08/29/18		
1,2-Dichloropropane	10	0.12	0.50	ug/L	10		102	10-210			08/29/18		
1,3-Dichlorobenzene	9.2	0.11	0.50	ug/L	10		92	59-156			08/29/18		
1,4-Dichlorobenzene	9.9	0.12	0.50	ug/L	10		99	18-190			08/29/18		
2-Butanone	9.9	1.2	20	ug/L	10		99	46-156			08/29/18	J	
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135			08/29/18	J	
4-Methyl-2-pentanone	10	0.97	20	ug/L	10		104	67-136			08/29/18	J	
Acetone	11	1.4	5.0	ug/L	10		107	19-194			08/29/18		
Benzene	10	0.15	0.50	ug/L	10		101	37-151			08/29/18		
Bromodichloromethane	9.7	0.10	0.50	ug/L	10		97	35-155			08/29/18		
Bromoform	9.7	0.14	0.50	ug/L	10		97	45-169			08/29/18		
Bromomethane	13	0.19	1.0	ug/L	10		125	10-242			08/29/18		
Carbon disulfide	10	1.6	5.0	ug/L	10		104	78-140			08/29/18		
Carbon Tetrachloride	10	0.10	0.50	ug/L	10		100	70-140			08/29/18		
Chlorobenzene	9.8	0.13	0.50	ug/L	10		98	37-160			08/29/18		
Chloroethane	10	0.13	0.50	ug/L	10		103	14-230			08/29/18		
Chloroform	8.1	0.10	0.50	ug/L	10		81	51-138			08/29/18		
Chloromethane	11	0.18	0.50	ug/L	10		114	10-273			08/29/18		
cis-1,2-Dichloroethene	9.9	0.10	0.50	ug/L	10		99	81-130			08/29/18		
cis-1,3-Dichloropropene	9.4	0.11	0.50	ug/L	10		94	10-227			08/29/18		
Dibromochloromethane	9.7	0.085	0.50	ug/L	10		97	53-149			08/29/18		
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		108	52-171			08/29/18		
Dichloromethane	9.8	0.11	0.50	ug/L	10		98	10-221			08/29/18		
Ethylbenzene	10	0.13	0.50	ug/L	10		100	37-162			08/29/18		
Hexachloroethane	9.1	0.15	1.0	ug/L	10		91	78-145			08/29/18		
m,p-Xylenes	20	0.22	0.50	ug/L	20		100	83-108			08/29/18		
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20		98	79-131			08/29/18		
o-Xylene	9.9	0.12	0.50	ug/L	10		99	81-115			08/29/18		
Styrene	9.8	0.16	0.50	ug/L	10		98	78-117			08/29/18		
Tetrachloroethene (PCE)	16	0.11	0.50	ug/L	10		162	64-148			08/29/18	BS	***High***
Toluene	10	0.14	0.50	ug/L	10		101	47-150			08/29/18		
trans-1,2-Dichloroethene	11	0.13	0.50	ug/L	10		107	54-156			08/29/18		
trans-1,3-Dichloropropene	9.4	0.12	0.50	ug/L	10		94	17-183			08/29/18		

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A812435											Prepared: 8/29/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Blank Spike (A812435-BS1)												
Trichloroethene (TCE)	10	0.13	0.50	ug/L	10		104	71-157			08/29/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		107	17-181			08/29/18	
Vinyl Chloride	11	0.15	0.50	ug/L	10		107	10-251			08/29/18	
Surrogate: 1,2-Dichloroethane-d4	*50*				*50*		*101*	*70-130*			08/29/18	
Surrogate: Bromofluorobenzene	*52*				*50*		*104*	*70-130*			08/29/18	
Surrogate: Toluene-d8	*50*				*50*		*100*	*70-130*			08/29/18	
Blank Spike Dup (A812435-BSD1)												
1,1,1-Trichloroethane	11	0.14	0.50	ug/L	10		107	52-162	3	30	08/29/18	
1,1,2,2-Tetrachloroethane	9.6	0.12	0.50	ug/L	10		96	46-157	2	30	08/29/18	
1,1,2-Trichloroethane	9.8	0.14	0.50	ug/L	10		98	52-150	0	30	08/29/18	
1,1-Dichloroethane	10	0.11	0.50	ug/L	10		105	59-155	3	30	08/29/18	
1,1-Dichloroethene	11	0.12	0.50	ug/L	10		110	10-234	3	30	08/29/18	
1,2-Dichlorobenzene	10	0.12	0.50	ug/L	10		101	18-190	2	30	08/29/18	
1,2-Dichloroethane	10	0.10	0.50	ug/L	10		101	49-155	2	30	08/29/18	
1,2-Dichloropropane	10	0.12	0.50	ug/L	10		105	10-210	2	30	08/29/18	
1,3-Dichlorobenzene	10	0.11	0.50	ug/L	10		104	59-156	12	30	08/29/18	
1,4-Dichlorobenzene	10	0.12	0.50	ug/L	10		100	18-190	1	30	08/29/18	
2-Butanone	10	1.2	20	ug/L	10		101	46-156	2	30	08/29/18	J
2-Hexanone	9.9	1.2	20	ug/L	10		99	56-135	0	30	08/29/18	J
4-Methyl-2-pentanone	10	0.97	20	ug/L	10		101	67-136	3	30	08/29/18	J
Acetone	11	1.4	5.0	ug/L	10		112	19-194	4	30	08/29/18	
Benzene	10	0.15	0.50	ug/L	10		104	37-151	3	30	08/29/18	
Bromodichloromethane	10	0.10	0.50	ug/L	10		101	35-155	4	30	08/29/18	
Bromoform	9.9	0.14	0.50	ug/L	10		99	45-169	2	30	08/29/18	
Bromomethane	13	0.19	1.0	ug/L	10		128	10-242	2	30	08/29/18	
Carbon disulfide	11	1.6	5.0	ug/L	10		109	78-140	4	30	08/29/18	
Carbon Tetrachloride	10	0.10	0.50	ug/L	10		103	70-140	3	30	08/29/18	
Chlorobenzene	10	0.13	0.50	ug/L	10		100	37-160	2	30	08/29/18	
Chloroethane	11	0.13	0.50	ug/L	10		106	14-230	3	30	08/29/18	
Chloroform	8.9	0.10	0.50	ug/L	10		89	51-138	10	30	08/29/18	
Chloromethane	12	0.18	0.50	ug/L	10		116	10-273	1	30	08/29/18	
cis-1,2-Dichloroethene	10	0.10	0.50	ug/L	10		101	81-130	2	30	08/29/18	
cis-1,3-Dichloropropene	9.8	0.11	0.50	ug/L	10		98	10-227	4	30	08/29/18	
Dibromochloromethane	9.9	0.085	0.50	ug/L	10		99	53-149	1	30	08/29/18	
Dichlorodifluoromethane	11	0.11	1.0	ug/L	10		110	52-171	2	30	08/29/18	
Dichloromethane	10	0.11	0.50	ug/L	10		102	10-221	3	30	08/29/18	
Ethylbenzene	10	0.13	0.50	ug/L	10		101	37-162	1	30	08/29/18	
Hexachloroethane	10	0.15	1.0	ug/L	10		100	78-145	10	30	08/29/18	
m,p-Xylenes	20	0.22	0.50	ug/L	20		100	83-108	0	30	08/29/18	
Methyl-t-butyl ether	20	0.22	0.50	ug/L	20		101	79-131	3	30	08/29/18	
o-Xylene	10	0.12	0.50	ug/L	10		101	81-115	2	30	08/29/18	
Styrene	10	0.16	0.50	ug/L	10		100	78-117	2	30	08/29/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 624 - Quality Control													
Batch: A812435											Prepared: 8/29/2018		
Prep Method: no prep-volatiles											Analyst: AMN		
Blank Spike Dup (A812435-BSD1)													
Tetrachloroethene (PCE)	16	0.11	0.50	ug/L	10		160	64-148	1	30	08/29/18	BS	***High***
Toluene	10	0.14	0.50	ug/L	10		102	47-150	1	30	08/29/18		
trans-1,2-Dichloroethene	10	0.13	0.50	ug/L	10		105	54-156	2	30	08/29/18		
trans-1,3-Dichloropropene	9.6	0.12	0.50	ug/L	10		96	17-183	2	30	08/29/18		
Trichloroethene (TCE)	11	0.13	0.50	ug/L	10		106	71-157	3	30	08/29/18		
Trichlorofluoromethane	11	0.12	0.50	ug/L	10		110	17-181	2	30	08/29/18		
Vinyl Chloride	11	0.15	0.50	ug/L	10		110	10-251	2	30	08/29/18		
Surrogate: 1,2-Dichloroethane-d4	*51*				*50*		*103*	*70-130*			08/29/18		
Surrogate: Bromofluorobenzene	*50*				*50*		*100*	*70-130*			08/29/18		
Surrogate: Toluene-d8	*51*				*50*		*102*	*70-130*			08/29/18		
Matrix Spike (A812435-MS1), Source: A8H3934-02													
1,1,1-Trichloroethane	10	0.14	0.50	ug/L	10	ND	104	52-162			08/30/18		
1,1,2,2-Tetrachloroethane	8.9	0.12	0.50	ug/L	10	ND	89	46-157			08/30/18		
1,1,2-Trichloroethane	9.3	0.14	0.50	ug/L	10	ND	93	52-150			08/30/18		
1,1-Dichloroethane	10	0.11	0.50	ug/L	10	ND	101	59-155			08/30/18		
1,1-Dichloroethene	11	0.12	0.50	ug/L	10	ND	108	10-234			08/30/18		
1,2-Dichlorobenzene	9.2	0.12	0.50	ug/L	10	ND	92	18-190			08/30/18		
1,2-Dichloroethane	9.6	0.10	0.50	ug/L	10	ND	96	49-155			08/30/18		
1,2-Dichloropropane	9.8	0.12	0.50	ug/L	10	ND	98	10-210			08/30/18		
1,3-Dichlorobenzene	9.2	0.11	0.50	ug/L	10	ND	92	59-156			08/30/18		
1,4-Dichlorobenzene	9.2	0.12	0.50	ug/L	10	ND	92	18-190			08/30/18		
2-Butanone	9.4	1.2	20	ug/L	10	ND	94	46-156			08/30/18	J	
2-Hexanone	9.2	1.2	20	ug/L	10	ND	92	56-135			08/30/18	J	
4-Methyl-2-pentanone	9.3	0.97	20	ug/L	10	ND	93	67-136			08/30/18	J	
Acetone	10	1.4	5.0	ug/L	10	ND	101	19-194			08/30/18		
Benzene	10	0.15	0.50	ug/L	10	ND	100	37-151			08/30/18		
Bromodichloromethane	9.9	0.10	0.50	ug/L	10	0.38	95	35-155			08/30/18		
Bromoform	8.4	0.14	0.50	ug/L	10	ND	84	45-169			08/30/18		
Bromomethane	5.4	0.19	1.0	ug/L	10	ND	54	10-242			08/30/18		
Carbon disulfide	11	1.6	5.0	ug/L	10	ND	107	78-140			08/30/18		
Carbon Tetrachloride	10	0.10	0.50	ug/L	10	ND	101	70-140			08/30/18		
Chlorobenzene	9.6	0.13	0.50	ug/L	10	ND	96	37-160			08/30/18		
Chloroethane	10	0.13	0.50	ug/L	10	ND	102	14-230			08/30/18		
Chloroform	13	0.10	0.50	ug/L	10	2.9	103	51-138			08/30/18		
Chloromethane	9.3	0.18	0.50	ug/L	10	0.79	85	10-273			08/30/18		
cis-1,2-Dichloroethene	9.6	0.10	0.50	ug/L	10	ND	96	81-130			08/30/18		
cis-1,3-Dichloropropene	8.9	0.11	0.50	ug/L	10	ND	89	10-227			08/30/18		
Dibromochloromethane	9.1	0.085	0.50	ug/L	10	ND	91	53-149			08/30/18		
Dichlorodifluoromethane	10	0.11	1.0	ug/L	10	ND	102	52-171			08/30/18		
Dichloromethane	9.5	0.11	0.50	ug/L	10	ND	95	10-221			08/30/18		
Ethylbenzene	9.8	0.13	0.50	ug/L	10	ND	98	37-162			08/30/18		
Hexachloroethane	9.6	0.15	1.0	ug/L	10	ND	96	78-145			08/30/18		

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 624 - Quality Control												
Batch: A812435											Prepared: 8/29/2018	
Prep Method: no prep-volatiles											Analyst: AMN	
Matrix Spike (A812435-MS1), Source: A8H3934-02												
m,p-Xylenes	20	0.22	0.50	ug/L	20	ND	98	83-108			08/30/18	
Methyl-t-butyl ether	18	0.22	0.50	ug/L	20	ND	92	79-131			08/30/18	
o-Xylene	9.6	0.12	0.50	ug/L	10	ND	96	81-115			08/30/18	
Styrene	8.9	0.16	0.50	ug/L	10	ND	89	78-117			08/30/18	
Tetrachloroethene (PCE)	9.6	0.11	0.50	ug/L	10	ND	96	64-148			08/30/18	
Toluene	10	0.14	0.50	ug/L	10	ND	100	47-150			08/30/18	
trans-1,2-Dichloroethene	10	0.13	0.50	ug/L	10	ND	100	54-156			08/30/18	
trans-1,3-Dichloropropene	8.7	0.12	0.50	ug/L	10	ND	87	17-183			08/30/18	
Trichloroethene (TCE)	9.9	0.13	0.50	ug/L	10	ND	99	71-157			08/30/18	
Trichlorofluoromethane	11	0.12	0.50	ug/L	10	ND	108	17-181			08/30/18	
Vinyl Chloride	10	0.15	0.50	ug/L	10	ND	100	10-251			08/30/18	
Surrogate: 1,2-Dichloroethane-d4	*52*				*50*		*104*	*70-130*			08/30/18	
Surrogate: Bromofluorobenzene	*50*				*50*		*101*	*70-130*			08/30/18	
Surrogate: Toluene-d8	*50*				*50*		*101*	*70-130*			08/30/18	
EPA 625 - Quality Control												
Batch: A812742											Prepared: 8/29/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812742-BLK1)												
1,2,4-Trichlorobenzene	ND	0.10	0.50	ug/L							09/05/18	
1,2-Diphenylhydrazine (as Azobenzene)	ND	0.10	0.50	ug/L							09/05/18	
2,4,6-Trichlorophenol	ND	0.14	0.50	ug/L							09/05/18	
2,4-Dichlorophenol	ND	0.10	0.50	ug/L							09/05/18	
2,4-Dimethylphenol	ND	0.15	0.50	ug/L							09/05/18	
2,4-Dinitrophenol	ND	0.27	1.0	ug/L							09/05/18	
2,4-Dinitrotoluene	ND	0.10	0.50	ug/L							09/05/18	
2,6-Dinitrotoluene	ND	0.36	0.50	ug/L							09/05/18	
2-Chloronaphthalene	ND	0.10	0.50	ug/L							09/05/18	
2-Chlorophenol	ND	0.11	0.50	ug/L							09/05/18	
2-Nitrophenol	ND	0.21	0.50	ug/L							09/05/18	
3,3-Dichlorobenzidine	ND	0.54	2.0	ug/L							09/05/18	
4,6-Dinitro-2-methylphenol	ND	0.11	0.50	ug/L							09/05/18	
4-Bromophenyl phenyl ether	ND	0.10	0.50	ug/L							09/05/18	
4-Chloro-3-methylphenol	ND	0.10	0.50	ug/L							09/05/18	
4-Chlorophenyl phenyl ether	ND	0.23	0.50	ug/L							09/05/18	
4-Nitrophenol	ND	0.26	1.0	ug/L							09/05/18	
Acenaphthene	ND	0.0040	0.010	ug/L							09/05/18	
Acenaphthylene	ND	0.0023	0.010	ug/L							09/05/18	
Anthracene	ND	0.0020	0.010	ug/L							09/05/18	
Benzidine	ND	1.4	5.0	ug/L							09/05/18	
Benzo(a)anthracene	ND	0.0023	0.010	ug/L							09/05/18	
Benzo(a)pyrene	ND	0.0033	0.010	ug/L							09/05/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812742											Prepared: 8/29/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank (A812742-BLK1)												
Benzo(b)fluoranthene	ND	0.0021	0.010	ug/L							09/05/18	
Benzo(g,h,i)perylene	ND	0.0039	0.010	ug/L							09/05/18	
Benzo(k)fluoranthene	ND	0.0028	0.010	ug/L							09/05/18	
Bis(2-chloroethoxy)methane	ND	0.10	0.50	ug/L							09/05/18	
Bis(2-chloroethyl) ether	ND	0.15	0.50	ug/L							09/05/18	
Bis(2-chloroisopropyl) ether	ND	0.13	0.50	ug/L							09/05/18	
Bis(2-ethylhexyl) phthalate	ND	0.29	1.0	ug/L							09/05/18	
Butyl benzyl phthalate	ND	0.10	0.50	ug/L							09/05/18	
Chrysene	ND	0.0011	0.010	ug/L							09/05/18	
Dibenzo(a,h)anthracene	ND	0.0031	0.010	ug/L							09/05/18	
Diethyl phthalate	ND	0.10	0.50	ug/L							09/05/18	
Dimethyl phthalate	ND	0.10	0.50	ug/L							09/05/18	
Di-n-butyl phthalate	ND	0.14	0.50	ug/L							09/05/18	
Di-n-octyl phthalate	ND	0.11	0.50	ug/L							09/05/18	
Fluoranthene	ND	0.0012	0.010	ug/L							09/05/18	
Fluorene	ND	0.0043	0.010	ug/L							09/05/18	
Hexachlorobenzene	ND	0.15	0.50	ug/L							09/05/18	
Hexachlorobutadiene	ND	0.13	0.50	ug/L							09/05/18	
Hexachlorocyclopentadiene	ND	0.14	0.50	ug/L							09/05/18	
Indeno(1,2,3-cd)pyrene	ND	0.0027	0.010	ug/L							09/05/18	
Isophorone	ND	0.11	0.50	ug/L							09/05/18	
Naphthalene	ND	0.0027	0.010	ug/L							09/05/18	
Nitrobenzene	ND	0.11	0.50	ug/L							09/05/18	
N-Nitrosodimethylamine (NDMA)	ND	0.48	0.50	ug/L							09/05/18	
N-Nitrosodi-n-propylamine (NDPA)	ND	0.10	0.50	ug/L							09/05/18	
N-Nitrosodiphenylamine (as DPA)	ND	0.24	0.50	ug/L							09/05/18	
Pentachlorophenol	ND	0.20	1.0	ug/L							09/05/18	
Phenanthrene	ND	0.0024	0.010	ug/L							09/05/18	
Phenol	ND	0.10	0.50	ug/L							09/05/18	
Pyrene	ND	0.0014	0.010	ug/L							09/05/18	
Surrogate: 2,4,6-Tribromophenol	*7.3*				*5.0*		*146*	*53-200*			09/05/18	
Surrogate: 2-Fluorobiphenyl	*4.7*				*5.0*		*93*	*40-127*			09/05/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*80*	*42-123*			09/05/18	
Surrogate: Nitrobenzene-d5	*4.2*				*5.0*		*84*	*49-133*			09/05/18	
Surrogate: Phenol-d6	*5.1*				*5.0*		*102*	*52-125*			09/05/18	
Surrogate: p-Terphenyl-d14	*5.0*				*5.0*		*101*	*39-135*			09/05/18	
Blank Spike (A812742-BS1)												
1,2,4-Trichlorobenzene	3.2	0.10	0.50	ug/L	5.0		64	44-142			09/05/18	
1,2-Diphenylhydrazine (as Azobenzene)	4.2	0.10	0.50	ug/L	5.0		84	30-130			09/05/18	
2,4,6-Trichlorophenol	4.8	0.14	0.50	ug/L	5.0		97	37-144			09/05/18	
2,4-Dichlorophenol	4.5	0.10	0.50	ug/L	5.0		91	39-135			09/05/18	
2,4-Dimethylphenol	3.6	0.15	0.50	ug/L	5.0		72	10-175			09/05/18	
2,4-Dinitrophenol	3.8	0.27	1.0	ug/L	5.0		75	10-191			09/05/18	

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Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 625 - Quality Control													
Batch: A812742											Prepared: 8/29/2018		
Prep Method: EPA 3520C											Analyst: YNV		
Blank Spike (A812742-BS1)													
2,4-Dinitrotoluene	4.9	0.10	0.50	ug/L	5.0		98	39-139			09/05/18		
2,6-Dinitrotoluene	4.9	0.36	0.50	ug/L	5.0		97	50-158			09/05/18		
2-Chloronaphthalene	4.2	0.10	0.50	ug/L	5.0		84	60-118			09/05/18		
2-Chlorophenol	4.3	0.11	0.50	ug/L	5.0		87	23-134			09/05/18		
2-Nitrophenol	4.3	0.21	0.50	ug/L	5.0		85	29-182			09/05/18		
3,3-Dichlorobenzidine	7.5	0.54	2.0	ug/L	20		37	10-200			09/05/18		
4,6-Dinitro-2-methylphenol	3.4	0.11	0.50	ug/L	5.0		67	10-181			09/05/18		
4-Bromophenyl phenyl ether	4.7	0.10	0.50	ug/L	5.0		94	53-127			09/05/18		
4-Chloro-3-methylphenol	4.7	0.10	0.50	ug/L	5.0		95	22-147			09/05/18		
4-Chlorophenyl phenyl ether	4.5	0.23	0.50	ug/L	5.0		89	25-158			09/05/18		
4-Nitrophenol	4.6	0.26	1.0	ug/L	5.0		92	10-132			09/05/18		
Acenaphthene	0.090	0.0040	0.010	ug/L	0.10		90	47-145			09/05/18		
Acenaphthylene	0.080	0.0023	0.010	ug/L	0.10		80	33-145			09/05/18		
Anthracene	0.090	0.0020	0.010	ug/L	0.10		90	27-133			09/05/18		
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200			09/05/18	BS	***Low***
Benzo(a)anthracene	0.10	0.0023	0.010	ug/L	0.10		103	33-143			09/05/18		
Benzo(a)pyrene	0.080	0.0033	0.010	ug/L	0.10		80	17-163			09/05/18		
Benzo(b)fluoranthene	0.11	0.0021	0.010	ug/L	0.10		106	24-159			09/05/18		
Benzo(g,h,i)perylene	0.090	0.0039	0.010	ug/L	0.10		90	10-200			09/05/18		
Benzo(k)fluoranthene	0.10	0.0028	0.010	ug/L	0.10		105	11-162			09/05/18		
Bis(2-chloroethoxy)methane	4.8	0.10	0.50	ug/L	5.0		96	33-184			09/05/18		
Bis(2-chloroethyl) ether	4.9	0.15	0.50	ug/L	5.0		99	12-158			09/05/18		
Bis(2-chloroisopropyl) ether	4.7	0.13	0.50	ug/L	5.0		95	36-166			09/05/18		
Bis(2-ethylhexyl) phthalate	5.6	0.29	1.0	ug/L	5.0		111	10-158			09/05/18		
Butyl benzyl phthalate	3.3	0.10	0.50	ug/L	5.0		65	10-152			09/05/18		
Chrysene	0.098	0.0011	0.010	ug/L	0.10		98	17-168			09/05/18		
Dibenzo(a,h)anthracene	0.10	0.0031	0.010	ug/L	0.10		104	10-200			09/05/18		
Diethyl phthalate	3.0	0.10	0.50	ug/L	5.0		60	10-114			09/05/18		
Dimethyl phthalate	1.3	0.10	0.50	ug/L	5.0		25	10-112			09/05/18		
Di-n-butyl phthalate	4.2	0.14	0.50	ug/L	5.0		83	10-118			09/05/18		
Di-n-octyl phthalate	5.4	0.11	0.50	ug/L	5.0		107	10-146			09/05/18		
Fluoranthene	0.10	0.0012	0.010	ug/L	0.10		104	26-137			09/05/18		
Fluorene	0.095	0.0043	0.010	ug/L	0.10		95	59-121			09/05/18		
Hexachlorobenzene	4.6	0.15	0.50	ug/L	5.0		92	10-152			09/05/18		
Hexachlorobutadiene	2.8	0.13	0.50	ug/L	5.0		56	24-116			09/05/18		
Hexachlorocyclopentadiene	2.4	0.14	0.50	ug/L	5.0		49	10-130			09/05/18		
Indeno(1,2,3-cd)pyrene	0.091	0.0027	0.010	ug/L	0.10		91	10-171			09/05/18		
Isophorone	4.9	0.11	0.50	ug/L	5.0		99	21-196			09/05/18		
Naphthalene	0.084	0.0027	0.010	ug/L	0.10		84	21-133			09/05/18		
Nitrobenzene	6.0	0.11	0.50	ug/L	5.0		119	35-180			09/05/18		
N-Nitrosodimethylamine (NDMA)	3.4	0.48	0.50	ug/L	5.0		69	10-130			09/05/18		
N-Nitrosodi-n-propylamine (NDPA)	3.5	0.10	0.50	ug/L	5.0		69	10-200			09/05/18		
N-Nitrosodiphenylamine (as DPA)	3.4	0.24	0.50	ug/L	5.0		67	10-130			09/05/18		

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812742											Prepared: 8/29/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike (A812742-BS1)												
Pentachlorophenol	4.9	0.20	1.0	ug/L	5.0		98	14-176			09/05/18	
Phenanthrene	0.10	0.0024	0.010	ug/L	0.10		101	54-120			09/05/18	
Phenol	4.5	0.10	0.50	ug/L	5.0		90	10-112			09/05/18	
Pyrene	0.099	0.0014	0.010	ug/L	0.10		99	52-115			09/05/18	
Surrogate: 2,4,6-Tribromophenol	*7.8*				*5.0*		*156*	*53-200*			09/05/18	
Surrogate: 2-Fluorobiphenyl	*4.7*				*5.0*		*95*	*40-127*			09/05/18	
Surrogate: 2-Fluorophenol	*4.0*				*5.0*		*81*	*42-123*			09/05/18	
Surrogate: Nitrobenzene-d5	*4.9*				*5.0*		*98*	*49-133*			09/05/18	
Surrogate: Phenol-d6	*5.1*				*5.0*		*103*	*52-125*			09/05/18	
Surrogate: p-Terphenyl-d14	*5.0*				*5.0*		*101*	*39-135*			09/05/18	
Blank Spike Dup (A812742-BSD1)												
1,2,4-Trichlorobenzene	3.3	0.10	0.50	ug/L	5.0		66	44-142	3	30	09/05/18	
1,2-Diphenylhydrazine (as Azobenzene)	4.3	0.10	0.50	ug/L	5.0		85	30-130	2	30	09/05/18	
2,4,6-Trichlorophenol	5.0	0.14	0.50	ug/L	5.0		100	37-144	4	30	09/05/18	
2,4-Dichlorophenol	4.6	0.10	0.50	ug/L	5.0		93	39-135	2	30	09/05/18	
2,4-Dimethylphenol	3.9	0.15	0.50	ug/L	5.0		78	10-175	7	30	09/05/18	
2,4-Dinitrophenol	4.2	0.27	1.0	ug/L	5.0		83	10-191	10	30	09/05/18	
2,4-Dinitrotoluene	5.2	0.10	0.50	ug/L	5.0		103	39-139	5	30	09/05/18	
2,6-Dinitrotoluene	5.0	0.36	0.50	ug/L	5.0		101	50-158	4	30	09/05/18	
2-Chloronaphthalene	4.3	0.10	0.50	ug/L	5.0		87	60-118	3	30	09/05/18	
2-Chlorophenol	4.5	0.11	0.50	ug/L	5.0		89	23-134	3	30	09/05/18	
2-Nitrophenol	4.6	0.21	0.50	ug/L	5.0		92	29-182	7	30	09/05/18	
3,3-Dichlorobenzidine	11	0.54	2.0	ug/L	20		54	10-200	37	30	09/05/18	BS3.0
4,6-Dinitro-2-methylphenol	3.7	0.11	0.50	ug/L	5.0		74	10-181	10	30	09/05/18	
4-Bromophenyl phenyl ether	4.9	0.10	0.50	ug/L	5.0		97	53-127	3	30	09/05/18	
4-Chloro-3-methylphenol	5.0	0.10	0.50	ug/L	5.0		101	22-147	6	30	09/05/18	
4-Chlorophenyl phenyl ether	4.7	0.23	0.50	ug/L	5.0		93	25-158	4	30	09/05/18	
4-Nitrophenol	5.0	0.26	1.0	ug/L	5.0		100	10-132	8	30	09/05/18	
Acenaphthene	0.094	0.0040	0.010	ug/L	0.10		94	47-145	4	30	09/05/18	
Acenaphthylene	0.084	0.0023	0.010	ug/L	0.10		84	33-145	5	30	09/05/18	
Anthracene	0.094	0.0020	0.010	ug/L	0.10		94	27-133	4	30	09/05/18	
Benzidine	ND	1.4	5.0	ug/L	20		0	10-200		30	09/05/18	BS ***Low***
Benzo(a)anthracene	0.11	0.0023	0.010	ug/L	0.10		111	33-143	8	30	09/05/18	
Benzo(a)pyrene	0.088	0.0033	0.010	ug/L	0.10		88	17-163	10	30	09/05/18	
Benzo(b)fluoranthene	0.11	0.0021	0.010	ug/L	0.10		109	24-159	3	30	09/05/18	
Benzo(g,h,i)perylene	0.088	0.0039	0.010	ug/L	0.10		88	10-200	2	30	09/05/18	
Benzo(k)fluoranthene	0.11	0.0028	0.010	ug/L	0.10		109	11-162	4	30	09/05/18	
Bis(2-chloroethoxy)methane	4.9	0.10	0.50	ug/L	5.0		99	33-184	2	30	09/05/18	
Bis(2-chloroethyl) ether	5.0	0.15	0.50	ug/L	5.0		101	12-158	2	30	09/05/18	
Bis(2-chloroisopropyl) ether	5.0	0.13	0.50	ug/L	5.0		99	36-166	4	30	09/05/18	
Bis(2-ethylhexyl) phthalate	5.8	0.29	1.0	ug/L	5.0		116	10-158	4	30	09/05/18	
Butyl benzyl phthalate	2.8	0.10	0.50	ug/L	5.0		56	10-152	16	30	09/05/18	
Chrysene	0.10	0.0011	0.010	ug/L	0.10		100	17-168	2	30	09/05/18	

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812742											Prepared: 8/29/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Blank Spike Dup (A812742-BSD1)												
Dibenzo(a,h)anthracene	0.10	0.0031	0.010	ug/L	0.10		100	10-200	4	30	09/05/18	
Diethyl phthalate	2.6	0.10	0.50	ug/L	5.0		53	10-114	13	30	09/05/18	
Dimethyl phthalate	1.0	0.10	0.50	ug/L	5.0		20	10-112	22	30	09/05/18	
Di-n-butyl phthalate	3.9	0.14	0.50	ug/L	5.0		78	10-118	7	30	09/05/18	
Di-n-octyl phthalate	5.6	0.11	0.50	ug/L	5.0		112	10-146	4	30	09/05/18	
Fluoranthene	0.11	0.0012	0.010	ug/L	0.10		106	26-137	2	30	09/05/18	
Fluorene	0.097	0.0043	0.010	ug/L	0.10		97	59-121	2	30	09/05/18	
Hexachlorobenzene	4.7	0.15	0.50	ug/L	5.0		93	10-152	1	30	09/05/18	
Hexachlorobutadiene	2.8	0.13	0.50	ug/L	5.0		57	24-116	2	30	09/05/18	
Hexachlorocyclopentadiene	2.5	0.14	0.50	ug/L	5.0		50	10-130	4	30	09/05/18	
Indeno(1,2,3-cd)pyrene	0.090	0.0027	0.010	ug/L	0.10		90	10-171	1	30	09/05/18	
Isophorone	5.1	0.11	0.50	ug/L	5.0		101	21-196	3	30	09/05/18	
Naphthalene	0.086	0.0027	0.010	ug/L	0.10		86	21-133	3	30	09/05/18	
Nitrobenzene	5.9	0.11	0.50	ug/L	5.0		117	35-180	1	30	09/05/18	
N-Nitrosodimethylamine (NDMA)	3.5	0.48	0.50	ug/L	5.0		69	10-130	0	30	09/05/18	
N-Nitrosodi-n-propylamine (NDPA)	3.8	0.10	0.50	ug/L	5.0		76	10-200	9	30	09/05/18	
N-Nitrosodiphenylamine (as DPA)	4.1	0.24	0.50	ug/L	5.0		83	10-130	21	30	09/05/18	
Pentachlorophenol	5.0	0.20	1.0	ug/L	5.0		99	14-176	1	30	09/05/18	
Phenanthrene	0.097	0.0024	0.010	ug/L	0.10		97	54-120	4	30	09/05/18	
Phenol	4.8	0.10	0.50	ug/L	5.0		96	10-112	6	30	09/05/18	
Pyrene	0.10	0.0014	0.010	ug/L	0.10		101	52-115	2	30	09/05/18	
Surrogate: 2,4,6-Tribromophenol	*8.7*				*5.0*		*174*	*53-200*			09/05/18	
Surrogate: 2-Fluorobiphenyl	*4.8*				*5.0*		*95*	*40-127*			09/05/18	
Surrogate: 2-Fluorophenol	*4.1*				*5.0*		*81*	*42-123*			09/05/18	
Surrogate: Nitrobenzene-d5	*5.0*				*5.0*		*99*	*49-133*			09/05/18	
Surrogate: Phenol-d6	*5.2*				*5.0*		*104*	*52-125*			09/05/18	
Surrogate: p-Terphenyl-d14	*5.1*				*5.0*		*103*	*39-135*			09/05/18	
Matrix Spike (A812742-MS1), Source: A8H3425-01												
1,2,4-Trichlorobenzene	ND	5.0	25	ug/L	4.8	ND	0	44-142			09/06/18	MS1.0 ***Low***
1,2-Diphenylhydrazine (as Azobenzene)	ND	5.0	25	ug/L	4.8	ND	0	30-130			09/06/18	MS1.0 ***Low***
2,4,6-Trichlorophenol	ND	7.0	25	ug/L	4.8	ND	0	37-144			09/06/18	MS1.0 ***Low***
2,4-Dichlorophenol	ND	5.0	25	ug/L	4.8	ND	0	39-135			09/06/18	MS1.0 ***Low***
2,4-Dimethylphenol	ND	7.6	25	ug/L	4.8	ND	0	32-119			09/06/18	MS1.0 ***Low***
2,4-Dinitrophenol	22	14	50	ug/L	4.8	ND	453	10-191			09/06/18	MS1.0 ***High*** , J
2,4-Dinitrotoluene	5.9	5.0	25	ug/L	4.8	ND	122	39-139			09/06/18	J
2,6-Dinitrotoluene	ND	18	25	ug/L	4.8	ND	0	50-158			09/06/18	MS1.0 ***Low***
2-Chloronaphthalene	ND	5.0	25	ug/L	4.8	ND	0	60-118			09/06/18	MS1.0 ***Low***
2-Chlorophenol	ND	5.6	25	ug/L	4.8	ND	0	23-134			09/06/18	MS1.0 ***Low***
2-Nitrophenol	ND	11	25	ug/L	4.8	ND	0	29-182			09/06/18	MS1.0 ***Low***
3,3-Dichlorobenzidine	ND	27	100	ug/L	19	ND	0	10-200			09/06/18	MS1.0 ***Low***
4,6-Dinitro-2-methylphenol	15	5.3	25	ug/L	4.8	ND	316	10-181			09/06/18	MS1.0 ***High*** , J

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812742											Prepared: 8/29/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A812742-MS1), Source: A8H3425-01												
4-Bromophenyl phenyl ether	ND	5.0	25	ug/L	4.8	ND	0	53-127			09/06/18	MS1.0 ***Low***
4-Chloro-3-methylphenol	42	5.0	25	ug/L	4.8	35	147	22-147			09/06/18	
4-Chlorophenyl phenyl ether	ND	12	25	ug/L	4.8	ND	0	25-158			09/06/18	MS1.0 ***Low***
4-Nitrophenol	ND	13	50	ug/L	4.8	ND	0	10-132			09/06/18	MS1.0 ***Low***
Acenaphthene	0.25	0.20	0.50	ug/L	0.096	ND	265	47-145			09/06/18	MS1.0 ***High*** , J
Acenaphthylene	ND	0.11	0.50	ug/L	0.096	ND	0	33-145			09/06/18	MS1.0 ***Low***
Anthracene	ND	0.098	0.50	ug/L	0.096	ND	0	27-133			09/06/18	MS1.0 ***Low***
Benzidine	ND	70	250	ug/L	19	ND	0	10-200			09/06/18	MS1.0 ***Low***
Benzo(a)anthracene	ND	0.11	0.50	ug/L	0.096	ND	0	33-143			09/06/18	MS1.0 ***Low***
Benzo(a)pyrene	ND	0.16	0.50	ug/L	0.096	ND	0	17-163			09/06/18	MS1.0 ***Low***
Benzo(b)fluoranthene	ND	0.10	0.50	ug/L	0.096	ND	0	24-159			09/06/18	MS1.0 ***Low***
Benzo(g,h,i)perylene	ND	0.19	0.50	ug/L	0.096	ND	0	10-200			09/06/18	MS1.0 ***Low***
Benzo(k)fluoranthene	ND	0.14	0.50	ug/L	0.096	ND	0	11-162			09/06/18	MS1.0 ***Low***
Bis(2-chloroethoxy)methane	ND	5.0	25	ug/L	4.8	ND	0	33-184			09/06/18	MS1.0 ***Low***
Bis(2-chloroethyl) ether	ND	7.4	25	ug/L	4.8	ND	0	12-158			09/06/18	MS1.0 ***Low***
Bis(2-chloroisopropyl) ether	ND	6.3	25	ug/L	4.8	ND	0	36-166			09/06/18	MS1.0 ***Low***
Bis(2-ethylhexyl) phthalate	ND	15	50	ug/L	4.8	ND	0	10-158			09/06/18	MS1.0 ***Low***
Butyl benzyl phthalate	ND	5.0	25	ug/L	4.8	ND	0	10-152			09/06/18	MS1.0 ***Low***
Chrysene	0.59	0.057	0.50	ug/L	0.096	0.43	172	17-168			09/06/18	MS1.0 ***High***
Dibenzo(a,h)anthracene	ND	0.16	0.50	ug/L	0.096	ND	0	10-200			09/06/18	MS1.0 ***Low***
Diethyl phthalate	ND	5.0	25	ug/L	4.8	ND	0	10-114			09/06/18	MS1.0 ***Low***
Dimethyl phthalate	ND	5.0	25	ug/L	4.8	ND	0	10-112			09/06/18	MS1.0 ***Low***
Di-n-butyl phthalate	ND	6.8	25	ug/L	4.8	ND	0	10-118			09/06/18	MS1.0 ***Low***
Di-n-octyl phthalate	6.5	5.3	25	ug/L	4.8	ND	136	10-146			09/06/18	J
Fluoranthene	ND	0.061	0.50	ug/L	0.096	ND	0	26-137			09/06/18	MS1.0 ***Low***
Fluorene	0.30	0.22	0.50	ug/L	0.096	ND	314	59-121			09/06/18	MS1.0 ***High*** , J
Hexachlorobenzene	ND	7.6	25	ug/L	4.8	ND	0	10-152			09/06/18	MS1.0 ***Low***
Hexachlorobutadiene	ND	6.7	25	ug/L	4.8	ND	0	24-116			09/06/18	MS1.0 ***Low***
Hexachlorocyclopentadiene	ND	6.8	25	ug/L	4.8	ND	0	10-130			09/06/18	MS1.0 ***Low***
Indeno(1,2,3-cd)pyrene	0.24	0.13	0.50	ug/L	0.096	0.19	57	10-171			09/06/18	J
Isophorone	ND	5.7	25	ug/L	4.8	ND	0	21-196			09/06/18	MS1.0 ***Low***
Naphthalene	2.7	0.14	0.50	ug/L	0.096	2.8	NR	21-133			09/06/18	MS1.0 ***Low***
Nitrobenzene	ND	5.3	25	ug/L	4.8	ND	0	35-180			09/06/18	MS1.0 ***Low***
N-Nitrosodimethylamine (NDMA)	ND	24	25	ug/L	4.8	ND	0	10-130			09/06/18	MS1.0 ***Low***
N-Nitrosodi-n-propylamine (NDPA)	ND	5.1	25	ug/L	4.8	ND	0	10-200			09/06/18	MS1.0 ***Low***
N-Nitrosodiphenylamine (as DPA)	ND	12	25	ug/L	4.8	ND	0	10-130			09/06/18	MS1.0 ***Low***
Pentachlorophenol	23	10	50	ug/L	4.8	18	116	14-176			09/06/18	J
Phenanthrene	1.3	0.12	0.50	ug/L	0.096	ND	NR	54-120			09/06/18	MS1.0 ***High***
Phenol	23	5.0	25	ug/L	4.8	18	111	10-112			09/06/18	J
Pyrene	0.15	0.072	0.50	ug/L	0.096	ND	160	52-115			09/06/18	MS1.0 ***High*** , J
Surrogate: 2,4,6-Tribromophenol	*12*				*4.8*		*245*	*53-200*			09/06/18	*SR1.1*

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BSK Associates Laboratory Fresno

Organics Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 625 - Quality Control												
Batch: A812742											Prepared: 8/29/2018	
Prep Method: EPA 3520C											Analyst: YNV	
Matrix Spike (A812742-MS1), Source: A8H3425-01												
Surrogate: 2-Fluorobiphenyl	*4.5*				*4.8*		*95*	*40-127*			09/06/18	
Surrogate: 2-Fluorophenol	*6.2*				*4.8*		*130*	*42-123*			09/06/18	*SR1.2*
Surrogate: Nitrobenzene-d5	*8.4*				*4.8*		*175*	*49-133*			09/06/18	*SR1.1*
Surrogate: Phenol-d6	*5.3*				*4.8*		*111*	*52-125*			09/06/18	
Surrogate: p-Terphenyl-d14	*5.8*				*4.8*		*122*	*39-135*			09/06/18	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

EPA - UCMR4	CA00079	Los Angeles CSD	9254479	NELAP certified	4021-010
State of California - ELAP	1180	State of Hawaii	4021	State of Nevada	CA000792018-1
State of Oregon - NELAP	4021-010	State of Washington	C997-18		

Sacramento

State of California - ELAP	2435				

San Bernardino

Los Angeles CSD	9254478	NELAP certified	4119-003	State of California - ELAP	2993
State of Oregon - NELAP	4119-003				

Vancouver

NELAP certified	WA100008-011	State of Oregon - NELAP	WA100008-011	State of Washington	C824-18a

A8H3934

08292018

Abalo1080

Turnaround: Standard
Due Date: 9/13/2018

Abalone Coast Analytical, Inc.

Printed: 8/29/2018 6:55:47PM

36 HS3, 29

A8H3934 08/29/2018
Abalo1080 10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

24 Day

Lab Reference # B-5470

Client Full Name/ Business:	Address	City	State	Zip
City of Pismo Beach				
Bill To: **Same**				

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name
Lauren Herrick

Project:	R/O Brine Analysis
Contact Full Name:	**Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
loc. 6 1 **R/O Brine**	8/28/18 0945	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	24 cu	5x p/unp half gal, p/unp 1 liter	-1
	8/28/18 0945	EPA 625, EPA, 608, EPA 624, TCDD Equivalents		20	6x Ag/unp, 3x p/HNO3 1 liter	
	8/28/18 0945	Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
2	8/28/18 0945	Chronic Tox: Topsmelt			1x p/unp 5 gal	
OC. 2 **R/O Feed Water**	8/23/18 1001	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
	8/28/18 1001	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
	8/28/18 1001				3x VV/HCl, 1x VV/unp	

Relinquished By: Lauren Herrick	Received By:	Received By:	Lab:
Date/Time: 8/23/18 1015	Date/Time: 8/28/18 1043	Date/Time: 8/28/18 1224	
Lab:	Lab:	Lab:	Lab: Lab:

Method Of Shipment:
Client
Courier VAAA
Other:

Condition
Intact (y/n) yes
Sediment no
Temp. 25°C
On Ice **Yes** **No**

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile:

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

Received: Eff Ea BSMFA 8-29-18 @ 1000 by GSO

2.9 FHS3

A8H3934
Abalo1080

08/29/2018
10

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

Rush: 24 Hr | 48 Hr

ence # 18-5470

Client Full Name/ Business: | Address | City | State | Zip

City of Pismo Beach

Bill To: **Same**

Phone # **(805)773-7075**
Fax #
Cell #

Sign/Print Samplers Full Name

Project: **R/O Brine Analysis**
Contact Full Name: **Russ Fleming**

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
10C.6 1 **R/O Brine**	8/28/18 0945	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	~~24~~ 4 jar	5x p/unp half gal, p/unp 1 liter	-1
	8/28/18 0945	EPA 625, EPA, 608, EPA 624, TCDD Equivalents		20	6x Ag/unp, 3x p/HNO3 1 liter	
	8/28/18 0945	Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
2	8/28/18 0945	Chronic Tox: Topsmelt			1x p/unp 5 gal	
OC.2 **R/O Feed Water**	8/28/18 1001	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
	8/28/18 1001	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
	8/28/18 1001				3x VV/HCl, 1x VV/unp	

Relinquished By: LaurenHerrick	Received By:	Received By:	Lab:
Date/Time: 8/28/18 1015	Date/Time: 8/28/18 1043	Date/Time: 8/28/18 1224	
Lab:	Lab:	Lab:	Lab:

Method Of Shipment:
Client
Courier VAMA
Other:

Condition
Intact (y/n) yes
Sediment no
Temp. 2.8°C
On Ice **Yes** **No**

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile:

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

Received. EFF ea 8829 0900 6.4g 650

A8H3934
Abalo1080
08/29/2018
10

BSK Associates SR-FL-0002-19

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No (NA)	Bubbles Present VOAs (524.2/TCP/TTHM)? TB Received? (Check Method Below)	Yes No (NA) Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	(Yes) No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received — "—" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1-2				
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—	1C				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	P F					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F					
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—	3C				
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	6C				
HCl (AG) Lt. Blue Label O&G, Diesel, TCP	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—	3C				
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other:							
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Solids: Brass / Steel / Plastic Bag	—	—					

5280 48 C

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504 __ 524.2 __ TCP __ TTHM __ 537 __

8260/624 __

Labeled by: Jam @ 1643 Labels checked by: JWD @ 16:44 RUSH Paged by: _____ @ _____

External

A8H3934

DAVI LABORATORIES, ENVIRONMENTAL ASSOCIATES
730 Alfred Nobel Dr. * Hercules, Ca 94547 (510) 724-9450 Fax (510) 724-9174

ANALYTICAL RESULTS REPORT

Company: BSK Analytical Laboratories
Address: 1414 Stanislaus St.
Fresno, CA 93706

Project Manager: Michelle Kawaguchi
Report Date: September 26, 2018

Work Order Number: A8H3934

TABLE I

Sample ID Sample Desc.	Collection Date/Time	Matrix	EPA Method	Analyses	Results pCi/L	±	2 Sigma error	MDA
A8H3934-01 R/O Brine	08/28/18 (09:45)	Water	900.0 901.1	Gross Beta K-40	14.25 590	± ±	4.36 94	8.94 193
A8H3934-02 R/O Feed Water	08/28/18 (10:01)	Water	900.0 901.1	Gross Beta K-40	5.03 0.00	± ±	2.49 62	5.06 150

Analyses Date: September 21-26, 2018

TABLE II QA/QC

Analyses	Spike Added	Detected Activity	% Agreement	Bias	Flag
Gross Beta	469.75 pCi	462.62 pCi	98.48	1.52	A
Gamma (Cs-137)	786.26 pCi	757.38 pCi	96.33	3.67	A

Flag:

A = result accepted, Bias ≤ 20%
N = result not acceptable, Bias > 20%

Patricia Davi
Patricia Davi
QA/QC Manager
Davi Laboratories

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H3934

COPY

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Davi Laboratories
730 Alfred Nobel Drive
Hercules, CA 94547-1805
Phone :(510) 724-9450
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc		Sample Date
A8H3934-01	**R/O Brine**	**Client Matrix** Water	**08/28/2018 09:45**
Lab Matrix:	Water		
	Analysis: i L P none		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	
A8H3934-02	**R/O Feed Water**	**Client Matrix** Water	**08/28/2018 10:01**
Lab Matrix:	Water		
	Analysis:		
	EXT-Gross Beta		
	EXT-Miscellaneous	Potassium-40 via EPA 901.1	

Released By	Date	Received By	Date
	9.4.18		
Released By	Date	Received By	Date

CERES Analytical Laboratory, Inc.
4919 Windplay Dr Suite 1, El Dorado Hills, CA 95762

September 13, 2018

Ceres ID: 12323

BSK Associates
1414 Stanislaus St.
Fresno, CA 93706

The following report contains the results for the two waste water samples received on September 5, 2018. These samples were analyzed for tetra through octa chlorinated dioxins and dibenzofurans by EPA method 1613B. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # A8H3934.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date &Time
12323-001	R/O Brine A8H3934-01	9/5/2018	8/28/2018 9:45
12323-002	R/O Feed Water A8H3934-02	9/5/2018	8/28/2018 10:01

Section II: Data Summary

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Quality Assurance Sample Method Blank	QC Batch #: 1854 Matrix: Waste Water	Date Received: NA Date Extracted: 9/10/2018
Project ID: A8H3934	Sample Size: 1.000 L	ZB-5MS Analysis: 9/12/2018

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 3.21	0.887	5.00		13C-2378-TCDD	104	25-164	
12378-PeCDD	DL= 4.29	2.56	25.0		13C-12378-PeCDD	98.1	25-181	
123478-HxCDD	DL= 2.15	3.08	25.0		13C-123478-HxCDD	71.9	32-141	
123678-HxCDD	DL= 2.32	5.29	25.0		13C-123678-HxCDD	71.8	28-130	
123789-HxCDD	DL= 2.19	13.1	25.0		13C-1234678-HpCDD	104	23-140	
1234678-HpCDD	DL= 4.79	5.15	25.0		13C-OCDD	79.6	17-157	
OCDD	DL= 10.2	8.50	50.0		13C-2378-TCDF	123	24-169	
2,3,7,8-TCDF	DL= 3.98	0.733	5.00		13C-12378-PeCDF	113	24-185	
12378-PeCDF	DL= 4.64	2.96	25.0		13C-23478-PeCDF	111	21-178	
23478-PeCDF	DL= 4.02	5.40	25.0		13C-123478-HxCDF	90.7	26-152	
123478-HxCDF	DL= 2.19	3.93	25.0		13C-123678-HxCDF	99.4	26-123	
123678-HxCDF	DL= 2.25	2.94	25.0		13C-234678-HxCDF	101	28-136	
234678-HxCDF	DL= 2.08	4.32	25.0		13C-123789-HxCDF	97.8	29-147	
123789-HxCDF	DL= 2.62	4.70	25.0		13C-1234678-HpCDF	130	28-143	
1234678-HpCDF	DL= 2.50	4.24	25.0		13C-1234789-HpCDF	117	26-138	
1234789-HpCDF	DL= 4.07	5.74	25.0					
OCDF	DL= 12.7	11.7	50.0					

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.21	
Total PeCDD	DL= 4.29	
Total HxCDD	DL= 2.32	
Total HpCDD	DL= 4.79	
Total TCDF	DL= 3.98	
Total PeCDF	DL= 4.64	
Total HxCDF	DL= 2.62	
Total HpCDF	DL= 4.07	

CRS

37Cl4-2378-TCDD	103	35-197

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Quality Assurance Sample Ongoing Precision and Recovery		Date Received: NA
	QC Batch #: 1854	Date Extracted: 9/10/2018
	Matrix: Waste Water	ZB-5MS Analysis: 9/12/2018
Project ID: A8H3934	Sample Size: 1.000 L	

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	11.1	6.7-15.8	13C-2378-TCDD	101	20-175
12378-PeCDD	61.8	35-71	13C-12378-PeCDD	98.6	21-227
123478-HxCDD	60.8	35-82	13C-123478-HxCDD	88.1	21-193
123678-HxCDD	63.1	38-67	13C-123678-HxCDD	88.0	25-163
123789-HxCDD	63.9	32-81	13C-1234678-HpCDD	113	26-166
1234678-HpCDD	57.9	35-70	13C-OCDD	87.0	13-198
OCDD	115	78-144	13C-2378-TCDF	114	22-152
2,3,7,8-TCDF	12.6	7.5-15.8	13C-12378-PeCDF	119	21-192
12378-PeCDF	60.6	40-67	13C-23478-PeCDF	116	13-328
23478-PeCDF	59.0	34-80	13C-123478-HxCDF	114	19-202
123478-HxCDF	53.9	36-67	13C-123678-HxCDF	116	21-159
123678-HxCDF	57.0	42-65	13C-234678-HxCDF	113	22-176
234678-HxCDF	56.3	35-78	13C-123789-HxCDF	113	17-205
123789-HxCDF	58.7	39-65	13C-1234678-HpCDF	126	21-158
1234678-HpCDF	49.2	41-61	13C-1234789-HpCDF	130	20-186
1234789-HpCDF	50.2	39-69			
OCDF	119	63-170			
			CRS		
			37Cl4-2378-TCDD	97.0	31-191

(a) Limits based on method acceptance criteria.

Analyst: JMH

Reviewed by: BS

EPA Method 1613B

Client Sample ID: R/O Brine A8H3934-01		
Project ID: A8H3934	**Ceres Sample ID:** 12323-001	**Date Received:** 9/5/2018
	QC Batch #: 1854	**Date Extracted:** 9/10/2018
Date Collected: 8/28/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 9/12/2018
Time Collected: 9:45	**Sample Size:** 1.023 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 4.20	0.887	4.89		13C-2378-TCDD	105	25-164	
12378-PeCDD	DL= 2.98	2.56	24.4		13C-12378-PeCDD	86.0	25-181	
123478-HxCDD	DL= 5.16	3.08	24.4		13C-123478-HxCDD	102	32-141	
123678-HxCDD	DL= 5.59	5.29	24.4		13C-123678-HxCDD	102	28-130	
123789-HxCDD	DL= 5.26	13.1	24.4		13C-1234678-HpCDD	88.7	23-140	
1234678-HpCDD	DL= 4.96	5.15	24.4		13C-OCDD	79.3	17-157	
OCDD	DL= 14.1	8.50	48.9		13C-2378-TCDF	115	24-169	
2,3,7,8-TCDF	DL= 3.14	0.733	4.89		13C-12378-PeCDF	92.6	24-185	
12378-PeCDF	DL= 2.73	2.96	24.4		13C-23478-PeCDF	98.6	21-178	
23478-PeCDF	DL= 2.31	5.40	24.4		13C-123478-HxCDF	129	26-152	
123478-HxCDF	DL= 2.45	3.93	24.4		13C-123678-HxCDF	128	26-123	
123678-HxCDF	DL= 2.63	2.94	24.4		13C-234678-HxCDF	127	28-136	
234678-HxCDF	DL= 2.62	4.32	24.4		13C-123789-HxCDF	129	29-147	
123789-HxCDF	DL= 3.40	4.70	24.4		13C-1234678-HpCDF	116	28-143	
1234678-HpCDF	DL= 2.38	4.24	24.4		13C-1234789-HpCDF	77.8	26-138	
1234789-HpCDF	DL= 4.96	5.74	24.4					
OCDF	DL= 12.9	11.7	48.9					

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 4.20	
Total PeCDD	DL= 2.98	
Total HxCDD	DL= 5.59	
Total HpCDD	DL= 4.96	
Total TCDF	DL= 3.14	
Total PeCDF	DL= 2.73	
Total HxCDF	DL= 3.40	
Total HpCDF	DL= 4.96	

CRS			
37Cl4-2378-TCDD	130	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.

EPA Method 1613B

Client Sample ID: R/O Feed Water A8H3934-02		
Project ID: A8H3934	**Ceres Sample ID:** 12323-002	**Date Received:** 9/5/2018
	QC Batch #: 1854	**Date Extracted:** 9/10/2018
Date Collected: 8/28/2018	**Matrix:** Waste Water	**ZB-5MS Analysis:** 9/12/2018
Time Collected: 10:01	**Sample Size:** 1.023 L	**Q-225 Analysis:** NA

Analyte	Conc. (pg/L)	MDL	RL	Qual.
2,3,7,8-TCDD	DL= 3.38	0.887	4.89	
12378-PeCDD	DL= 6.24	2.56	24.4	
123478-HxCDD	DL= 4.15	3.08	24.4	
123678-HxCDD	DL= 4.50	5.29	24.4	
123789-HxCDD	DL= 4.23	13.1	24.4	
1234678-HpCDD	DL= 11.4	5.15	24.4	
OCDD	DL= 15.2	8.50	48.9	
2,3,7,8-TCDF	DL= 2.99	0.733	4.89	
12378-PeCDF	DL= 3.82	2.96	24.4	
23478-PeCDF	DL= 2.96	5.40	24.4	
123478-HxCDF	DL= 4.00	3.93	24.4	
123678-HxCDF	DL= 4.12	2.94	24.4	
234678-HxCDF	DL= 3.99	4.32	24.4	
123789-HxCDF	DL= 5.54	4.70	24.4	
1234678-HpCDF	DL= 3.69	4.24	24.4	
1234789-HpCDF	DL= 7.48	5.74	24.4	
OCDF	DL= 12.2	11.7	48.9	

Totals	Conc. (pg/L)	EMPC
Total TCDD	DL= 3.38	
Total PeCDD	DL= 6.24	
Total HxCDD	DL= 4.50	
Total HpCDD	DL= 11.4	
Total TCDF	DL= 2.99	
Total PeCDF	DL= 3.82	
Total HxCDF	DL= 5.54	
Total HpCDF	DL= 7.48	

Labeled Standards	% R	LCL-UCL (a)	Qualifiers
13C-2378-TCDD	98.2	25-164	
13C-12378-PeCDD	69.7	25-181	
13C-123478-HxCDD	92.5	32-141	
13C-123678-HxCDD	92.4	28-130	
13C-1234678-HpCDD	85.6	23-140	
13C-OCDD	72.7	17-157	
13C-2378-TCDF	112	24-169	
13C-12378-PeCDF	81.1	24-185	
13C-23478-PeCDF	94.5	21-178	
13C-123478-HxCDF	125	26-152	
13C-123678-HxCDF	126	26-123	
13C-234678-HxCDF	126	28-136	
13C-123789-HxCDF	116	29-147	
13C-1234678-HpCDF	116	28-143	
13C-1234789-HpCDF	79.3	26-138	

CRS

37Cl4-2378-TCDD	117	35-197	

DL - Signifies Non-Detect (ND) at sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit
(b) - TEQ based on (2005) World Health Organization (WHO) Toxic Equivalent Factors.

Total Toxic Equivalency (TEQ min.) (b): 0.0 pg/L

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

BSK ASSOCIATES

SUBCONTRACT ORDER

A8H3934

SENDING LABORATORY:

BSK Associates Laboratory Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Michelle Kawaguchi
E-mail: mkawaguchi@bskassociates.com

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc
4919 Windplay Drive, Suite 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax: -
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc			Sample Date
A8H3934-01	R/O Brine	Client Matrix	Water	08/28/2018 09:45
Lab Matrix:	Water			
	Analysis: 1 L AG NON-P			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			
A8H3934-02	R/O Feed Water	Client Matrix	Water	08/28/2018 10:01
Lab Matrix:	Water			
	Analysis:			
	EXT-Dioxin-WW, EPA 1613 PCDD/PCDF Congeners			

Released By	Date	Received By	Date
[signature]	9.4.18	[signature]	9/5/18 10:23
Released By	Date	Received By	Date

Sample Receipt Check List Logged by: _____ (initials)

Ceres ID: 12323	Date/Time: 9/5/18 10:23
Client Project ID: A843934	Received Temp: 3.1 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?	(Y) / N
Chain of Custody Received by signed?	(Y) / N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	(NA)
Unlabeled / Illegible Samples	Y / (N)
Proper Containers:	(Y) / N
Preservation Acceptable (Chemical or Temperature)?	(Y) / N
Drinking Water, Sodium Thiosulfate present?	Y / (N) / NA
Residual Cl?	Y / (N)
Aqueous sample pH: 8, 8	
List COC discrepancies:	
List Damaged Samples:	

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

aquatic bioassay & consulting laboratories, inc

August 31, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-4876 Pismo Beach)
DATE RECEIVED:	2 Aug - 18
ABC LAB. NO.:	ACB0818.028

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	15-3586-3402	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:41	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	07-9242-4238	**Code:**	ACB0818.028urc	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
13-4864-6198	Fertilization Rate	Dunnett Multiple Comparison Test	100	> 100	n/a	1	4.29%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
00-1479-7654	Fertilization Rate	Linear Interpolation (ICPIN)	EC5	>100	n/a	n/a	<1
			EC10	>100	n/a	n/a	<1
			EC15	>100	n/a	n/a	<1
			EC20	>100	n/a	n/a	<1
			EC25	>100	n/a	n/a	<1
			EC40	>100	n/a	n/a	<1
			EC50	>100	n/a	n/a	<1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
00-1479-7654	Fertilization Rate	Control Resp	0.9325	0.7	>>	Yes	Passes Criteria
13-4864-6198	Fertilization Rate	Control Resp	0.9325	0.7	>>	Yes	Passes Criteria

Fertilization Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9325	0.8997	0.9653	0.9100	0.9600	0.0103	0.0206	2.21%	0.00%
10		4	0.9625	0.9386	0.9864	0.9500	0.9800	0.0075	0.0150	1.56%	-3.22%
32.5		4	0.9425	0.9072	0.9778	0.9100	0.9600	0.0111	0.0222	2.35%	-1.07%
55		4	0.9350	0.8891	0.9809	0.9000	0.9700	0.0144	0.0289	3.09%	-0.27%
77.5		4	0.9325	0.9173	0.9477	0.9200	0.9400	0.0048	0.0096	1.03%	0.00%
100		4	0.9525	0.9253	0.9797	0.9300	0.9700	0.0085	0.0171	1.79%	-2.14%

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9300	0.9100	0.9600	0.9300
10		0.9500	0.9700	0.9800	0.9500
32.5		0.9100	0.9500	0.9600	0.9500
55		0.9000	0.9300	0.9400	0.9700
77.5		0.9400	0.9200	0.9400	0.9300
100		0.9300	0.9700	0.9600	0.9500

Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	93/100	91/100	96/100	93/100
10		95/100	97/100	98/100	95/100
32.5		91/100	95/100	96/100	95/100
55		90/100	93/100	94/100	97/100
77.5		94/100	92/100	94/100	93/100
100		93/100	97/100	96/100	95/100

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	13-4864-6198	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:09	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	15-3586-3402	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:41	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	07-9242-4238	**Code:**	ACB0818.028urc	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	4.29%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	-2.242	2.407	0.074	6	CDF	0.9996	Non-Significant Effect
		32.5	-0.6901	2.407	0.074	6	CDF	0.9615	Non-Significant Effect
		55	-0.2492	2.407	0.074	6	CDF	0.8962	Non-Significant Effect
		77.5	0.06433	2.407	0.074	6	CDF	0.8137	Non-Significant Effect
		100	-1.412	2.407	0.074	6	CDF	0.9946	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9325	0.7	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0155363	0.0031073	5	1.658	0.1958	Non-Significant Effect
Error	0.0337362	0.0018742	18			
Total	0.0492726		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.124	15.09	0.6808	Equal Variances
Variances	Levene Equality of Variance Test	0.566	4.248	0.7249	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.4245	4.248	0.8255	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.2385	3.878	0.8091	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.2517	2.576	0.8012	Normal Distribution
Distribution	D'Agostino Skewness Test	0.09828	2.576	0.9217	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.07303	9.21	0.9641	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1139	0.2056	0.5916	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9797	0.884	0.8893	Normal Distribution

Fertilization Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9325	0.8997	0.9653	0.9300	0.9100	0.9600	0.0103	2.21%	0.00%
10		4	0.9625	0.9386	0.9864	0.9600	0.9500	0.9800	0.0075	1.56%	-3.22%
32.5		4	0.9425	0.9072	0.9778	0.9500	0.9100	0.9600	0.0111	2.35%	-1.07%
55		4	0.9350	0.8891	0.9809	0.9350	0.9000	0.9700	0.0144	3.09%	-0.27%
77.5		4	0.9325	0.9173	0.9477	0.9350	0.9200	0.9400	0.0048	1.03%	0.00%
100		4	0.9525	0.9253	0.9797	0.9550	0.9300	0.9700	0.0085	1.79%	-2.14%

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	13-4864-6198	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:09	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.31	1.242	1.379	1.303	1.266	1.369	0.02152	3.28%	0.00%
10		4	1.379	1.314	1.445	1.371	1.345	1.429	0.02057	2.98%	-5.24%
32.5		4	1.332	1.26	1.403	1.345	1.266	1.369	0.02254	3.39%	-1.61%
55		4	1.318	1.221	1.415	1.313	1.249	1.397	0.03055	4.64%	-0.58%
77.5		4	1.308	1.278	1.338	1.313	1.284	1.323	0.009433	1.44%	0.15%
100		4	1.354	1.29	1.417	1.357	1.303	1.397	0.01987	2.94%	-3.30%

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9300	0.9100	0.9600	0.9300
10		0.9500	0.9700	0.9800	0.9500
32.5		0.9100	0.9500	0.9600	0.9500
55		0.9000	0.9300	0.9400	0.9700
77.5		0.9400	0.9200	0.9400	0.9300
100		0.9300	0.9700	0.9600	0.9500

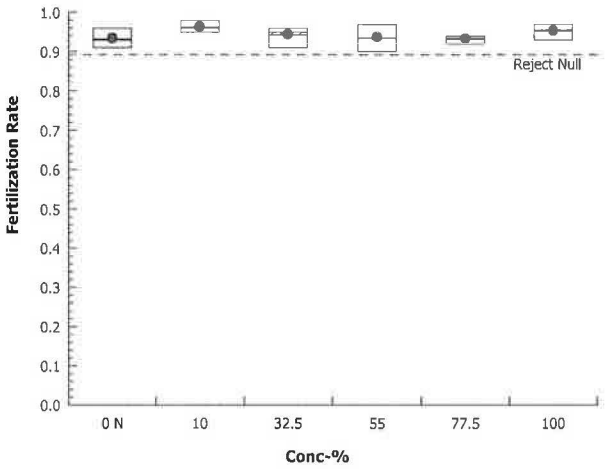
Angular (Corrected) Transformed Detail

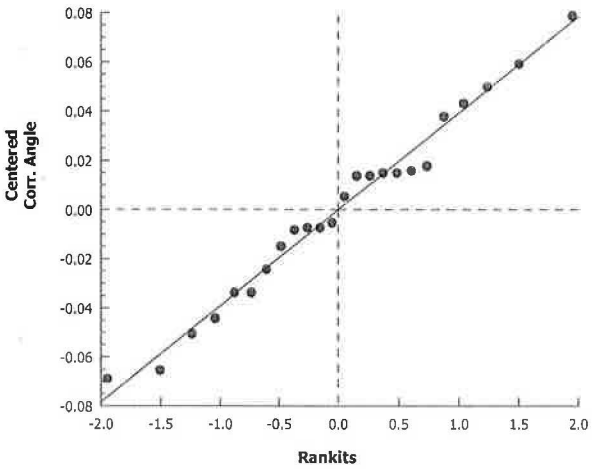
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.303	1.266	1.369	1.303
10		1.345	1.397	1.429	1.345
32.5		1.266	1.345	1.369	1.345
55		1.249	1.303	1.323	1.397
77.5		1.323	1.284	1.323	1.303
100		1.303	1.397	1.369	1.345

Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	93/100	91/100	96/100	93/100
10		95/100	97/100	98/100	95/100
32.5		91/100	95/100	96/100	95/100
55		90/100	93/100	94/100	97/100
77.5		94/100	92/100	94/100	93/100
100		93/100	97/100	96/100	95/100

Graphics





Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	00-1479-7654	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:09	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	15-3586-3402	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:41	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	07-9242-4238	**Code:**	ACB0818.028urc	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9325	0.7	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	n/a	n/a	<1	n/a	n/a
EC10	>100	n/a	n/a	<1	n/a	n/a
EC15	>100	n/a	n/a	<1	n/a	n/a
EC20	>100	n/a	n/a	<1	n/a	n/a
EC25	>100	n/a	n/a	<1	n/a	n/a
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Fertilization Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9325	0.9100	0.9600	0.0103	0.0206	2.21%	0.0%	373	400
10		4	0.9625	0.9500	0.9800	0.0075	0.0150	1.56%	-3.22%	385	400
32.5		4	0.9425	0.9100	0.9600	0.0111	0.0222	2.35%	-1.07%	377	400
55		4	0.9350	0.9000	0.9700	0.0144	0.0289	3.09%	-0.27%	374	400
77.5		4	0.9325	0.9200	0.9400	0.0048	0.0096	1.03%	0.0%	373	400
100		4	0.9525	0.9300	0.9700	0.0085	0.0171	1.79%	-2.15%	381	400

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9300	0.9100	0.9600	0.9300
10		0.9500	0.9700	0.9800	0.9500
32.5		0.9100	0.9500	0.9600	0.9500
55		0.9000	0.9300	0.9400	0.9700
77.5		0.9400	0.9200	0.9400	0.9300
100		0.9300	0.9700	0.9600	0.9500

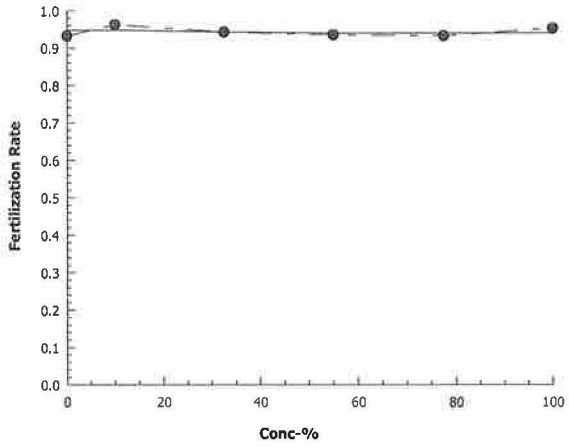
Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	93/100	91/100	96/100	93/100
10		95/100	97/100	98/100	95/100
32.5		91/100	95/100	96/100	95/100
55		90/100	93/100	94/100	97/100
77.5		94/100	92/100	94/100	93/100
100		93/100	97/100	96/100	95/100

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	00-1479-7654	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:09	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	15-3586-3402	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:41	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	

Sample ID:	07-9242-4238	**Code:**	ACB0818.028urc	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Parameter Acceptability Criteria

			TAC Limits			
Parameter	**Min**	**Max**	**Lower**	**Upper**	**Overlap**	**Decision**
Salinity	34	34	32	36	Yes	Passes Criteria
Temperature	14.6	14.8	11	13	Yes	Above Criteria

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.7	5.429	7.971	6.6	6.8	0.09999	0.1414	2.11%	0
10		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
32.5		2	6.35	4.444	8.256	6.2	6.5	0.15	0.2121	3.34%	0
55		2	6.3	6.298	6.302	6.3	6.3	0	0	0.0%	0
77.5		2	6.25	4.344	8.156	6.1	6.4	0.15	0.2121	3.39%	0
100		2	6.25	5.615	6.885	6.2	6.3	0.05001	0.07072	1.13%	0
Overall		12	6.367	6.228	6.506	6.1	6.8	0.06317	0.2188	3.44%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.95	7.315	8.585	7.9	8	0.04999	0.0707	0.89%	0
10		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
32.5		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
55		2	7.75	7.115	8.385	7.7	7.8	0.05001	0.07072	0.91%	0
77.5		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
100		2	7.6	7.594	7.606	7.6	7.6	0	0	0.0%	0
Overall		12	7.783	7.703	7.864	7.6	8	0.03658	0.1267	1.63%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.0%	0
10		2	34	34	34	34	34	0	0	0.0%	0
32.5		2	34	34	34	34	34	0	0	0.0%	0
55		2	34	34	34	34	34	0	0	0.0%	0
77.5		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
10		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
32.5		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
55		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
77.5		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
100		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
Overall		12	14.7	14.63	14.77	14.6	14.8	0.03015	0.1044	0.71%	0 (0%)

Purple Sea Urchin Sperm Cell Fertilization Test			Aquatic Bioassay & Consulting Labs, Inc.
Dissolved Oxygen-mg/L			
Conc-%	**Code**	**1**	**2**
0	N	6.8	6.6
10		6.6	6.1
32.5		6.5	6.2
55		6.3	6.3
77.5		6.4	6.1
100		6.3	6.2
pH-Units			
Conc-%	**Code**	**1**	**2**
0	N	7.9	8
10		7.9	7.9
32.5		7.8	7.8
55		7.8	7.7
77.5		7.7	7.7
100		7.6	7.6
Salinity-ppt			
Conc-%	**Code**	**1**	**2**
0	N	34	34
10		34	34
32.5		34	34
55		34	34
77.5		34	34
100		34	34
Temperature-°C			
Conc-%	**Code**	**1**	**2**
0	N	14.8	14.6
10		14.8	14.6
32.5		14.8	14.6
55		14.8	14.6
77.5		14.8	14.6
100		14.8	14.6

aquatic bioassay & consulting laboratories, inc

August 31, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receving Waters to West Coast Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-4876 Pismo Beach)
DATE RECEIVED:	2 Aug - 18
ABC LAB. NO.:	ACB0818.028

CHRONIC KELP GERMINATION AND GROWTH BIOASSAY

Germination	NOEC =	100.00 %
	TUc =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %
Tube Length	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	17-3993-9408	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:01	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	20-8667-2390	**Code:**	ACB0818.028klp	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
16-5044-2998	Germination Rate	Dunnett Multiple Comparison Test	100	> 100	n/a	1	3.05%	
09-5766-7194	Mean Length	Dunnett Multiple Comparison Test	100	> 100	n/a	1	2.12%	

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
05-4766-1103	Germination Rate	Linear Interpolation (ICPIN)	EC5	>100	n/a	n/a	<1	✓
			EC10	>100	n/a	n/a	<1	✓
			EC15	>100	n/a	n/a	<1	✓
			EC20	>100	n/a	n/a	<1	✓
			EC25	>100	n/a	n/a	<1	✓
			EC40	>100	n/a	n/a	<1	✓
			EC50	>100	n/a	n/a	<1	✓
03-9009-3189	Mean Length	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1	✓
			IC10	>100	n/a	n/a	<1	✓
			IC15	>100	n/a	n/a	<1	✓
			IC20	>100	n/a	n/a	<1	✓
			IC25	>100	n/a	n/a	<1	✓
			IC40	>100	n/a	n/a	<1	✓
			IC50	>100	n/a	n/a	<1	✓

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
05-4766-1103	Germination Rate	Control Resp	0.946	0.7	>>	Yes	Passes Criteria
16-5044-2998	Germination Rate	Control Resp	0.946	0.7	>>	Yes	Passes Criteria
03-9009-3189	Mean Length	Control Resp	13.82	10	>>	Yes	Passes Criteria
09-5766-7194	Mean Length	Control Resp	13.82	10	>>	Yes	Passes Criteria

Germination Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9460	0.9318	0.9602	0.9300	0.9600	0.0051	0.0114	1.21%	0.00%
10		5	0.9320	0.9051	0.9589	0.9000	0.9600	0.0097	0.0217	2.33%	1.48%
32.5		5	0.9360	0.9172	0.9548	0.9200	0.9600	0.0068	0.0152	1.62%	1.06%
55		5	0.9200	0.9024	0.9376	0.9100	0.9400	0.0063	0.0141	1.54%	2.75%
77.5		5	0.9320	0.9037	0.9603	0.9100	0.9600	0.0102	0.0228	2.45%	1.48%
100		5	0.9280	0.8959	0.9601	0.9000	0.9600	0.0116	0.0259	2.79%	1.90%

Mean Length Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	13.82	13.55	14.09	13.5	14.1	0.09695	0.2168	1.57%	0.00%
10		5	13.98	13.82	14.14	13.9	14.2	0.05831	0.1304	0.93%	-1.16%
32.5		5	13.64	13.3	13.98	13.3	13.9	0.1208	0.2702	1.98%	1.30%
55		5	13.84	13.67	14.01	13.6	13.9	0.06	0.1342	0.97%	-0.14%
77.5		5	13.76	13.47	14.05	13.5	14	0.103	0.2302	1.67%	0.43%
100		5	13.82	13.64	14	13.6	14	0.06633	0.1483	1.07%	0.00%

Macrocystis Germination and Germ Tube Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Germination Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9500	0.9600	0.9500	0.9400	0.9300
10		0.9300	0.9000	0.9300	0.9600	0.9400
32.5		0.9300	0.9200	0.9600	0.9300	0.9400
55		0.9100	0.9400	0.9300	0.9100	0.9100
77.5		0.9100	0.9600	0.9500	0.9300	0.9100
100		0.9000	0.9500	0.9100	0.9600	0.9200

Mean Length Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	13.5	13.8	13.9	14.1	13.8
10		14.2	14	13.9	13.9	13.9
32.5		13.3	13.8	13.4	13.9	13.8
55		13.9	13.9	13.9	13.6	13.9
77.5		13.6	13.7	14	14	13.5
100		13.6	13.8	13.9	14	13.8

Germination Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	95/100	96/100	95/100	94/100	93/100
10		93/100	90/100	93/100	96/100	94/100
32.5		93/100	92/100	96/100	93/100	94/100
55		91/100	94/100	93/100	91/100	91/100
77.5		91/100	96/100	95/100	93/100	91/100
100		90/100	95/100	91/100	96/100	92/100

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-5044-2998	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	17-3993-9408	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:01	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	20-8667-2390	**Code:**	ACB0818.028klp	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	3.05%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	1.12	2.362	0.058	8	CDF	0.3677	Non-Significant Effect
		32.5	0.837	2.362	0.058	8	CDF	0.4939	Non-Significant Effect
		55	2.116	2.362	0.058	8	CDF	0.0803	Non-Significant Effect
		77.5	1.103	2.362	0.058	8	CDF	0.3748	Non-Significant Effect
		100	1.395	2.362	0.058	8	CDF	0.2598	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.946	0.7	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.007337	0.0014674	5	0.9597	0.4617	Non-Significant Effect
Error	0.0366966	0.0015290	24			
Total	0.0440336		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.181	15.09	0.6721	Equal Variances
Variances	Levene Equality of Variance Test	1.301	3.895	0.2964	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.8567	4.248	0.5284	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4849	3.878	0.2314	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.198	2.576	0.2309	Normal Distribution
Distribution	D'Agostino Skewness Test	0.774	2.576	0.4389	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	2.034	9.21	0.3616	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1396	0.1853	0.1388	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9579	0.9031	0.2735	Normal Distribution

Germination Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9460	0.9318	0.9602	0.9500	0.9300	0.9600	0.0051	1.21%	0.00%
10		5	0.9320	0.9051	0.9589	0.9300	0.9000	0.9600	0.0097	2.33%	1.48%
32.5		5	0.9360	0.9172	0.9548	0.9300	0.9200	0.9600	0.0068	1.62%	1.06%
55		5	0.9200	0.9024	0.9376	0.9100	0.9100	0.9400	0.0063	1.54%	2.75%
77.5		5	0.9320	0.9037	0.9603	0.9300	0.9100	0.9600	0.0102	2.45%	1.48%
100		5	0.9280	0.8959	0.9601	0.9200	0.9000	0.9600	0.0116	2.79%	1.90%

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-5044-2998	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.337	1.306	1.368	1.345	1.303	1.369	0.01125	1.88%	0.00%
10		5	1.31	1.256	1.363	1.303	1.249	1.369	0.01939	3.31%	2.07%
32.5		5	1.317	1.276	1.357	1.303	1.284	1.369	0.0146	2.48%	1.55%
55		5	1.285	1.252	1.318	1.266	1.266	1.323	0.01197	2.08%	3.91%
77.5		5	1.31	1.252	1.368	1.303	1.266	1.369	0.02083	3.56%	2.04%
100		5	1.303	1.238	1.367	1.284	1.249	1.369	0.02327	3.99%	2.58%

Germination Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9500	0.9600	0.9500	0.9400	0.9300
10		0.9300	0.9000	0.9300	0.9600	0.9400
32.5		0.9300	0.9200	0.9600	0.9300	0.9400
55		0.9100	0.9400	0.9300	0.9100	0.9100
77.5		0.9100	0.9600	0.9500	0.9300	0.9100
100		0.9000	0.9500	0.9100	0.9600	0.9200

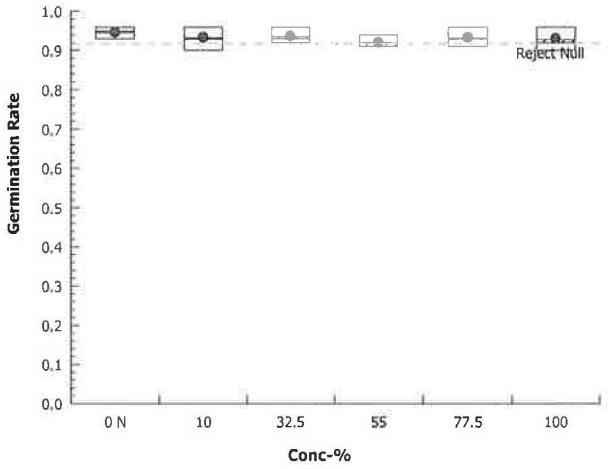
Angular (Corrected) Transformed Detail

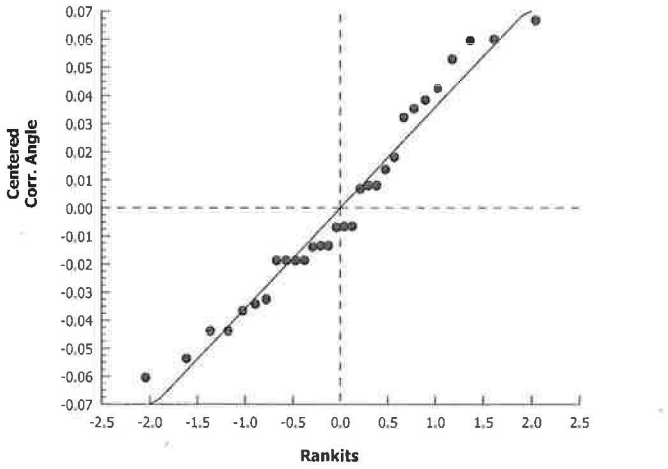
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.345	1.369	1.345	1.323	1.303
10		1.303	1.249	1.303	1.369	1.323
32.5		1.303	1.284	1.369	1.303	1.323
55		1.266	1.323	1.303	1.266	1.266
77.5		1.266	1.369	1.345	1.303	1.266
100		1.249	1.345	1.266	1.369	1.284

Germination Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	95/100	96/100	95/100	94/100	93/100
10		93/100	90/100	93/100	96/100	94/100
32.5		93/100	92/100	96/100	93/100	94/100
55		91/100	94/100	93/100	91/100	91/100
77.5		91/100	96/100	95/100	93/100	91/100
100		90/100	95/100	91/100	96/100	92/100

Graphics





Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	09-5766-7194	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	17-3993-9408	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:01	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	20-8667-2390	**Code:**	ACB0818.028klp	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	2.12%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	-1.292	2.362	0.292	8	CDF	0.9929	Non-Significant Effect
		32.5	1.454	2.362	0.292	8	CDF	0.2394	Non-Significant Effect
		55	-0.1615	2.362	0.292	8	CDF	0.8766	Non-Significant Effect
		77.5	0.4845	2.362	0.292	8	CDF	0.6537	Non-Significant Effect
		100	0	2.362	0.292	8	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	13.82	10	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.307	0.0613999	5	1.602	0.1977	Non-Significant Effect
Error	0.919999	0.0383333	24			
Total	1.227		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.472	15.09	0.6276	Equal Variances
Variances	Levene Equality of Variance Test	1.801	3.895	0.1508	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.8429	4.248	0.5369	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4246	3.878	0.3219	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.143	2.576	0.2529	Normal Distribution
Distribution	D'Agostino Skewness Test	0.6462	2.576	0.5182	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.725	9.21	0.4221	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.09856	0.1853	0.6501	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9565	0.9031	0.2512	Normal Distribution

Mean Length Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	13.82	13.55	14.09	13.8	13.5	14.1	0.09695	1.57%	0.00%
10		5	13.98	13.82	14.14	13.9	13.9	14.2	0.05831	0.93%	-1.16%
32.5		5	13.64	13.3	13.98	13.8	13.3	13.9	0.1208	1.98%	1.30%
55		5	13.84	13.67	14.01	13.9	13.6	13.9	0.06	0.97%	-0.14%
77.5		5	13.76	13.47	14.05	13.7	13.5	14	0.103	1.67%	0.43%
100		5	13.82	13.64	14	13.8	13.6	14	0.06633	1.07%	0.00%

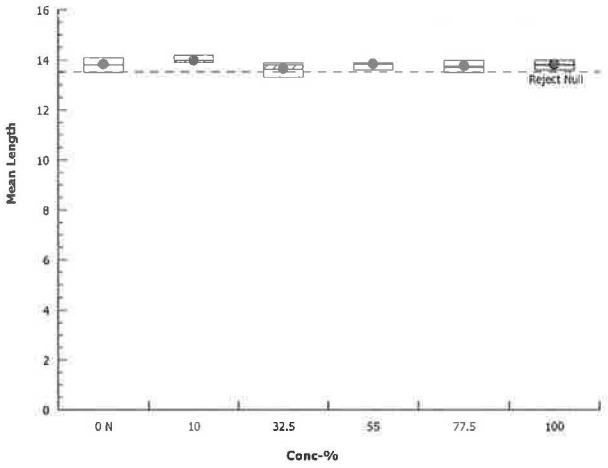
Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

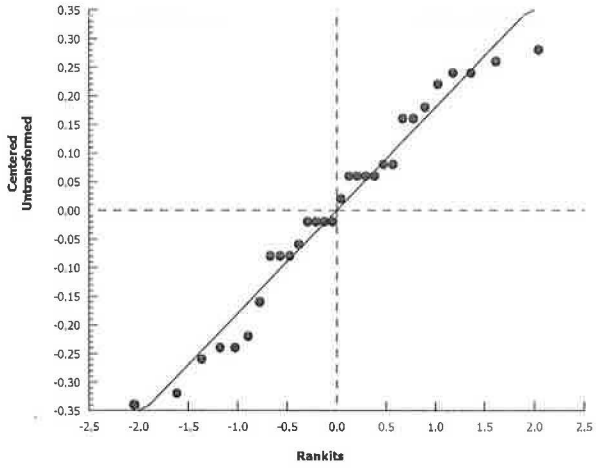
Analysis ID:	09-5766-7194	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Mean Length Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	13.5	13.8	13.9	14.1	13.8
10		14.2	14	13.9	13.9	13.9
32.5		13.3	13.8	13.4	13.9	13.8
55		13.9	13.9	13.9	13.6	13.9
77.5		13.6	13.7	14	14	13.5
100		13.6	13.8	13.9	14	13.8

Graphics





Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	05-4766-1103	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	17-3993-9408	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:01	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	20-8667-2390	**Code:**	ACB0818.028klp	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.946	0.7	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	n/a	n/a	<1	n/a	n/a
EC10	>100	n/a	n/a	<1	n/a	n/a
EC15	>100	n/a	n/a	<1	n/a	n/a
EC20	>100	n/a	n/a	<1	n/a	n/a
EC25	>100	n/a	n/a	<1	n/a	n/a
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Germination Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	5	0.9460	0.9300	0.9600	0.0051	0.0114	1.21%	0.0%	473	500
10		5	0.9320	0.9000	0.9600	0.0097	0.0217	2.33%	1.48%	466	500
32.5		5	0.9360	0.9200	0.9600	0.0068	0.0152	1.62%	1.06%	468	500
55		5	0.9200	0.9100	0.9400	0.0063	0.0141	1.54%	2.75%	460	500
77.5		5	0.9320	0.9100	0.9600	0.0102	0.0228	2.45%	1.48%	466	500
100		5	0.9280	0.9000	0.9600	0.0116	0.0259	2.79%	1.9%	464	500

Germination Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9500	0.9600	0.9500	0.9400	0.9300
10		0.9300	0.9000	0.9300	0.9600	0.9400
32.5		0.9300	0.9200	0.9600	0.9300	0.9400
55		0.9100	0.9400	0.9300	0.9100	0.9100
77.5		0.9100	0.9600	0.9500	0.9300	0.9100
100		0.9000	0.9500	0.9100	0.9600	0.9200

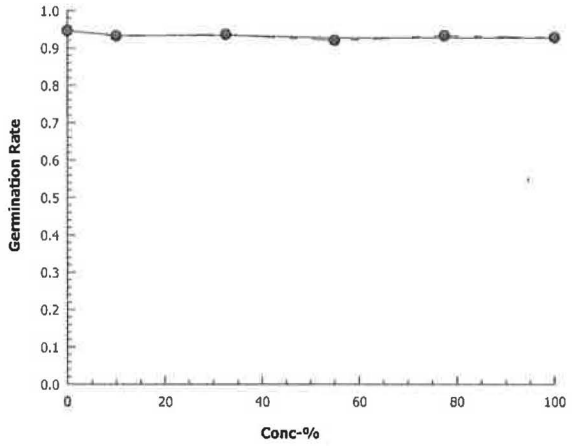
Germination Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	95/100	96/100	95/100	94/100	93/100
10		93/100	90/100	93/100	96/100	94/100
32.5		93/100	92/100	96/100	93/100	94/100
55		91/100	94/100	93/100	91/100	91/100
77.5		91/100	96/100	95/100	93/100	91/100
100		90/100	95/100	91/100	96/100	92/100

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	05-4766-1103	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	03-9009-3189	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	17-3993-9408	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:01	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	20-8667-2390	**Code:**	ACB0818.028klp	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	13.82	10	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Mean Length Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	5	13.82	13.5	14.1	0.09695	0.2168	1.57%	0.0%
10		5	13.98	13.9	14.2	0.05831	0.1304	0.93%	-1.16%
32.5		5	13.64	13.3	13.9	0.1208	0.2702	1.98%	1.3%
55		5	13.84	13.6	13.9	0.06	0.1342	0.97%	-0.14%
77.5		5	13.76	13.5	14	0.103	0.2302	1.67%	0.43%
100		5	13.82	13.6	14	0.06633	0.1483	1.07%	0.0%

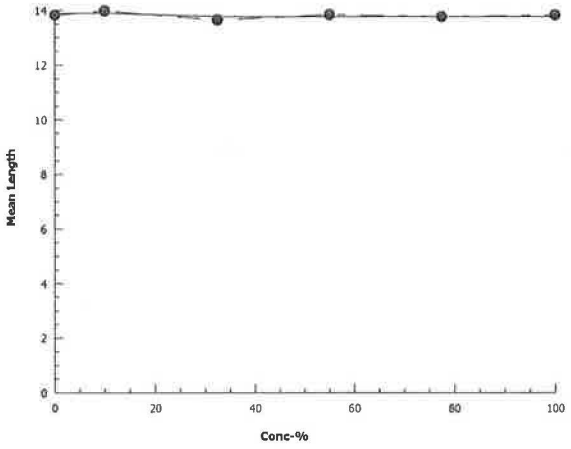
Mean Length Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	13.5	13.8	13.9	14.1	13.8
10		14.2	14	13.9	13.9	13.9
32.5		13.3	13.8	13.4	13.9	13.8
55		13.9	13.9	13.9	13.6	13.9
77.5		13.6	13.7	14	14	13.5
100		13.6	13.8	13.9	14	13.8

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	03-9009-3189	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:15	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	17-3993-9408	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:01	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	

Sample ID:	20-8667-2390	**Code:**	ACB0818.028klp	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	26h (5.3 °C)	**Station:**	R/O Brine		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.7	5.429	7.971	6.6	6.8	0.09999	0.1414	2.11%	0
10		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
32.5		2	6.35	4.444	8.256	6.2	6.5	0.15	0.2121	3.34%	0
55		2	6.3	6.298	6.302	6.3	6.3	0	0	0.0%	0
77.5		2	6.25	4.344	8.156	6.1	6.4	0.15	0.2121	3.39%	0
100		2	6.25	5.615	6.885	6.2	6.3	0.05001	0.07072	1.13%	0
Overall		12	6.367	6.228	6.506	6.1	6.8	0.06317	0.2188	3.44%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.95	7.315	8.585	7.9	8	0.04999	0.0707	0.89%	0
10		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
32.5		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
55		2	7.75	7.115	8.385	7.7	7.8	0.05001	0.07072	0.91%	0
77.5		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
100		2	7.6	7.594	7.606	7.6	7.6	0	0	0.0%	0
Overall		12	7.783	7.703	7.864	7.6	8	0.03658	0.1267	1.63%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.0%	0
10		2	34	34	34	34	34	0	0	0.0%	0
32.5		2	34	34	34	34	34	0	0	0.0%	0
55		2	34	34	34	34	34	0	0	0.0%	0
77.5		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
10		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
32.5		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
55		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
77.5		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
100		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
Overall		12	14.7	14.63	14.77	14.6	14.8	0.03015	0.1044	0.71%	0 (0%)

Macrocystis Germination and Germ Tube Growth Test			Aquatic Bioassay & Consulting Labs, Inc.
Dissolved Oxygen-mg/L			
Conc-%	**Code**	**1**	**2**
0	N	6.8	6.6
10		6.6	6.1
32.5		6.5	6.2
55		6.3	6.3
77.5		6.4	6.1
100		6.3	6.2
pH-Units			
Conc-%	**Code**	**1**	**2**
0	N	7.9	8
10		7.9	7.9
32.5		7.8	7.8
55		7.8	7.7
77.5		7.7	7.7
100		7.6	7.6
Salinity-ppt			
Conc-%	**Code**	**1**	**2**
0	N	34	34
10		34	34
32.5		34	34
55		34	34
77.5		34	34
100		34	34
Temperature-°C			
Conc-%	**Code**	**1**	**2**
0	N	14.8	14.6
10		14.8	14.6
32.5		14.8	14.6
55		14.8	14.6
77.5		14.8	14.6
100		14.8	14.6

aquatic bioassay & consulting laboratories, inc

August 31, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Marine and Freshwater Organisms EPA-821-R-02-012*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-4876 Pismo Beach)
DATE RECEIVED:	2 Aug - 18
ABC LAB. NO.:	ACB0818.028

ACUTE SILVERSIDES LARVAE SURVIVAL BIOASSAY

SURVIVAL = 50 % Survival in 100 % Sample

EC25 = 82.69 %
EC50 = 100.00 %
*TUa = 1.00
*TU(a) Is calculated by: log (% Mortality)/1.7

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	07-6082-7595	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Aug-18 14:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	06 Aug-18 12:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-0017-5612	**Code:**	ACB0818.028amen	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	27h (5.3 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-9305-7671	96h Survival Rate	Steel Many-One Rank Sum Test	55	77.5	65.29	1.818	13.6%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
11-0265-6400	96h Survival Rate	Linear Interpolation (ICPIN)	EC5	55	7	63.31	1.818
			EC10	64	49.6	85.6	1.562
			EC15	73	59.63	84.7	1.37
			EC20	79.23	66.18	88.46	1.262
			EC25	82.69	74.38	95.98	1.209
			EC40	93.08	82.55	n/a	1.074
			EC50	100	85.6	n/a	1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
01-9305-7671	96h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria
11-0265-6400	96h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
32.5		4	0.9500	0.8581	1.0000	0.9000	1.0000	0.0289	0.0577	6.08%	5.00%
55		4	0.9500	0.8581	1.0000	0.9000	1.0000	0.0289	0.0577	6.08%	5.00%
77.5		4	0.8250	0.6727	0.9773	0.7000	0.9000	0.0479	0.0957	11.61%	17.50%
100		4	0.5000	0.1102	0.8898	0.3000	0.8000	0.1225	0.2449	48.99%	50.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
32.5		1.0000	1.0000	0.9000	0.9000
55		1.0000	0.9000	1.0000	0.9000
77.5		0.9000	0.9000	0.8000	0.7000
100		0.3000	0.6000	0.8000	0.3000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
10		10/10	10/10	10/10	10/10
32.5		10/10	10/10	9/10	9/10
55		10/10	9/10	10/10	9/10
77.5		9/10	9/10	8/10	7/10
100		3/10	6/10	8/10	3/10

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-9305-7671	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:20	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	07-6082-7595	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Aug-18 14:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	06 Aug-18 12:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-0017-5612	**Code:**	ACB0818.028amen	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	27h (5.3 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	55	77.5	65.29	1.818	13.61%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		32.5	14	10	1	6	Asymp	0.3451	Non-Significant Effect
		55	14	10	1	6	Asymp	0.3451	Non-Significant Effect
		77.5*	10	10	0	6	Asymp	0.0417	Significant Effect
		100*	10	10	0	6	Asymp	0.0417	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.15189	0.230377	5	13.91	1.2E-05	Significant Effect
Error	0.298106	0.0165614	18			
Total	1.44999		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	13.72	4.248	1.3E-05	Unequal Variances
Variances	Mod Levene Equality of Variance Test	9.149	4.248	1.8E-04	Unequal Variances
Distribution	Anderson-Darling A2 Normality Test	0.8471	3.878	0.0291	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.664	2.576	0.0962	Normal Distribution
Distribution	D'Agostino Skewness Test	0.9432	2.576	0.3456	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	3.657	9.21	0.1606	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1667	0.2056	0.0833	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9193	0.884	0.0563	Normal Distribution

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
32.5		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	5.00%
55		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	5.00%
77.5		4	0.8250	0.6727	0.9773	0.8500	0.7000	0.9000	0.0479	11.61%	17.50%
100		4	0.5000	0.1102	0.8898	0.4500	0.3000	0.8000	0.1225	48.99%	50.00%

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 01-9305-7671 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 30 Aug-18 8:20 **Analysis:** Nonparametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
10		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
32.5		4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	5.77%
55		4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	5.77%
77.5		4	1.149	0.9506	1.348	1.178	0.9912	1.249	0.06237	10.86%	18.62%
100		4	0.7881	0.379	1.197	0.7329	0.5796	1.107	0.1286	32.62%	44.18%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
32.5		1.0000	1.0000	0.9000	0.9000
55		1.0000	0.9000	1.0000	0.9000
77.5		0.9000	0.9000	0.8000	0.7000
100		0.3000	0.6000	0.8000	0.3000

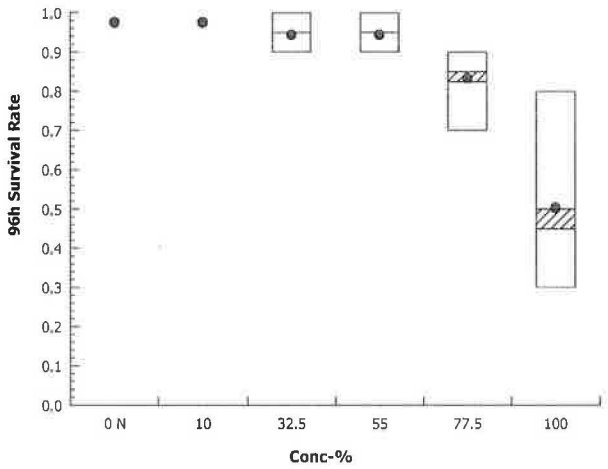
Angular (Corrected) Transformed Detail

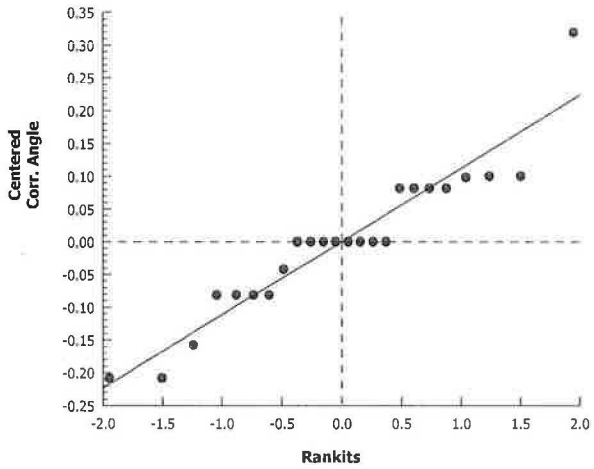
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.412	1.412	1.412	1.412
10		1.412	1.412	1.412	1.412
32.5		1.412	1.412	1.249	1.249
55		1.412	1.249	1.412	1.249
77.5		1.249	1.249	1.107	0.9912
100		0.5796	0.8861	1.107	0.5796

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
10		10/10	10/10	10/10	10/10
32.5		10/10	10/10	9/10	9/10
55		10/10	9/10	10/10	9/10
77.5		9/10	9/10	8/10	7/10
100		3/10	6/10	8/10	3/10

Graphics





Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	11-0265-6400	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	07-6082-7595	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Aug-18 14:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	06 Aug-18 12:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-0017-5612	**Code:**	ACB0818.028amen	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	27h (5.3 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	55	7	63.31	1.818	1.58	14.29
EC10	64	49.6	85.6	1.562	1.168	2.016
EC15	73	59.63	84.7	1.37	1.181	1.677
EC20	79.23	66.18	88.46	1.262	1.13	1.511
EC25	82.69	74.38	95.98	1.209	1.042	1.344
EC40	93.08	82.55	n/a	1.074	n/a	1.211
EC50	100	85.6	n/a	1	n/a	1.168

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
10		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
32.5		4	0.9500	0.9000	1.0000	0.0289	0.0577	6.08%	5.0%	38	40
55		4	0.9500	0.9000	1.0000	0.0289	0.0577	6.08%	5.0%	38	40
77.5		4	0.8250	0.7000	0.9000	0.0479	0.0957	11.61%	17.5%	33	40
100		4	0.5000	0.3000	0.8000	0.1225	0.2449	48.99%	50.0%	20	40

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
32.5		1.0000	1.0000	0.9000	0.9000
55		1.0000	0.9000	1.0000	0.9000
77.5		0.9000	0.9000	0.8000	0.7000
100		0.3000	0.6000	0.8000	0.3000

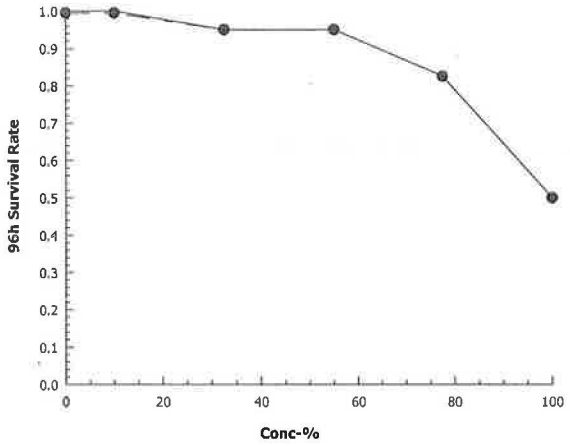
96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
10		10/10	10/10	10/10	10/10
32.5		10/10	10/10	9/10	9/10
55		10/10	9/10	10/10	9/10
77.5		9/10	9/10	8/10	7/10
100		3/10	6/10	8/10	3/10

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	11-0265-6400	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 8:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	07-6082-7595	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	02 Aug-18 14:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	06 Aug-18 12:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	15-0017-5612	**Code:**	ACB0818.028amen	**Client:**	Abalone Coast Analytical
Sample Date:	01 Aug-18 11:00	**Material:**	Sample Water	**Project:**	18-4876 Pismo Beach
Receipt Date:	02 Aug-18 09:00	**Source:**	Bioassay Report		
Sample Age:	27h (5.3 °C)	**Station:**	R/O Brine		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	6.033	3.892	8.175	5.1	6.8	0.4978	0.8622	14.29%	0
10		3	6.1	3.579	8.621	5	7	0.5859	1.015	16.64%	0
32.5		3	6.267	3.366	9.167	5	7.3	0.6741	1.168	18.63%	0
55		3	6.367	3.059	9.675	4.9	7.5	0.7688	1.332	20.92%	0
77.5		3	6.333	3.13	9.537	4.9	7.4	0.7446	1.29	20.36%	0
100		3	6.367	3.059	9.675	4.9	7.5	0.7688	1.332	20.92%	0
Overall		18	6.244	5.747	6.742	4.9	7.5	0.2357	1	16.02%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	7.352	7.848	7.5	7.7	0.05773	0.1	1.32%	0
10		3	7.6	7.352	7.848	7.5	7.7	0.05773	0.1	1.32%	0
32.5		3	7.6	7.352	7.848	7.5	7.7	0.05773	0.1	1.32%	0
55		3	7.567	6.942	8.192	7.3	7.8	0.1453	0.2517	3.33%	0
77.5		3	7.5	6.755	8.245	7.2	7.8	0.1732	0.3	4.0%	0
100		3	7.5	6.755	8.245	7.2	7.8	0.1732	0.3	4.0%	0
Overall		18	7.561	7.469	7.653	7.2	7.8	0.04364	0.1852	2.45%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	25	25	25	25	25	0	0	0.0%	0
10		3	25	25	25	25	25	0	0	0.0%	0
32.5		3	25	25	25	25	25	0	0	0.0%	0
55		3	25	25	25	25	25	0	0	0.0%	0
77.5		3	25	25	25	25	25	0	0	0.0%	0
100		3	25	25	25	25	25	0	0	0.0%	0
Overall		18	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	24	24	24	24	24	0	0	0.0%	0
10		3	24	24	24	24	24	0	0	0.0%	0
32.5		3	24	24	24	24	24	0	0	0.0%	0
55		3	24	24	24	24	24	0	0	0.0%	0
77.5		3	24	24	24	24	24	0	0	0.0%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		18	24	24	24	24	24	0	0	0.00%	0 (0%)

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3
0	N	6.2	6.8	5.1
10		7	6.3	5
32.5		7.3	6.5	5
55		7.5	6.7	4.9
77.5		7.4	6.7	4.9
100		7.5	6.7	4.9

pH-Units

Conc-%	Code	1	2	3
0	N	7.7	7.5	7.6
10		7.5	7.6	7.7
32.5		7.5	7.6	7.7
55		7.3	7.6	7.8
77.5		7.2	7.5	7.8
100		7.2	7.5	7.8

Salinity-ppt

Conc-%	Code	1	2	3
0	N	25	25	25
10		25	25	25
32.5		25	25	25
55		25	25	25
77.5		25	25	25
100		25	25	25

Temperature-°C

Conc-%	Code	1	2	3
0	N	24	24	24
10		24	24	24
32.5		24	24	24
55		24	24	24
77.5		24	24	24
100		24	24	24

Chain- Of -Custody
Subcontract

DUE 24-Hou 48 - Hour Normal

Client Name:	Address	City	State	Zip
Abalone Coast Analytical	**141 Suburban Rd, STE C-1**	**San Luis Obispo**	**CA**	**93401**
Bill To:	**same as above**			

PROJECT K-4876 Pismo Beach

Phone # 805-595-1080
Email: info@abalonecoastanalytical.com
Cell # 805-235-2330

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	8/1/18 1100	Acute Tox - Silversides	AQ	9	5gallonx1	-1
		3 Species Chronic TOX: Urchin			8 x ½ gal	
Temp. deg. C =		15.3°C Kelp			UP	
		Topsmelt				
Chlorine (mg/L) =		<0.1				
NH3 (mg/L) =		8.0				

Relinquished By: Jesus Perez	Received By: [illegible]	Received By:
Date/Time 8/1/18 1215	Date/Time 8-2-18 0900	Date/Time

.028

filepath: c:/business doc/forms/subcontract form

State forms needed - Y / (N)

Sampler name: Hailie Hix
Sampler employeed by: Pismo Beach

USER ID
System number
System name

Remarks:

aquatic bioassay & consulting laboratories, inc

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

DATE: 8/2/2018

STANDARD TOXICANT: Copper Chloride

NOEC = 18.00 ug/l

EC25 = 35.33 ug/l
EC50 = 46.11 ug/l

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 aquabio.org

CETIS Summary Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	14-8021-1808	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	01-1339-1404	**Code:**	URC080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
07-6626-8236	Fertilization Rate	Dunnett Multiple Comparison Test	18	32	24		4.48%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU ✓
04-5291-7318	Fertilization Rate	Linear Interpolation (ICPIN)	EC5	22.05	18.69	23.24	
			EC10	26.11	22.76	28.48	
			EC15	30.16	26.15	33.38	
			EC20	33.18	29.69	34.92	
			EC25	35.33	32.53	36.91	
			EC40	41.8	39.71	42.93	
			EC50	46.11	44.39	47.08	

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
04-5291-7318	Fertilization Rate	Control Resp	0.9325	0.7	>>	Yes	Passes Criteria
07-6626-8236	Fertilization Rate	Control Resp	0.9325	0.7	>>	Yes	Passes Criteria
07-6626-8236	Fertilization Rate	PMSD	0.04483	<<	0.25	No	Passes Criteria

Fertilization Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9325	0.8907	0.9743	0.9100	0.9600	0.0132	0.0263	2.82%	0.00%
18		4	0.9350	0.9019	0.9681	0.9100	0.9600	0.0104	0.0208	2.23%	-0.27%
32		4	0.7725	0.7168	0.8282	0.7200	0.7900	0.0175	0.0350	4.53%	17.16%
56		4	0.2525	0.2286	0.2764	0.2300	0.2600	0.0075	0.0150	5.94%	72.92%
100		4	0.0550	0.0091	0.1009	0.0300	0.0800	0.0144	0.0289	52.49%	94.10%
180		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Fertilization Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9100	0.9500	0.9100	0.9600
18		0.9300	0.9400	0.9600	0.9100
32		0.7900	0.7200	0.7900	0.7900
56		0.2600	0.2300	0.2600	0.2600
100		0.0800	0.0300	0.0800	0.0300
180		0.0000	0.0000	0.0000	0.0000

Fertilization Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	91/100	95/100	91/100	96/100
18		93/100	94/100	96/100	91/100
32		79/100	72/100	79/100	79/100
56		26/100	23/100	26/100	26/100
100		8/100	3/100	8/100	3/100
180		0/100	0/100	0/100	0/100

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	07-6626-8236	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:04	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	14-8021-1808	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	01-1339-1404	**Code:**	URC080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	18	32	24		4.48%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		18	-0.1133	2.356	0.078	6	CDF	0.8346	Non-Significant Effect
		32*	7.18	2.356	0.078	6	CDF	6.7E-06	Significant Effect
		56*	23.76	2.356	0.078	6	CDF	7.9E-07	Significant Effect
		100*	32.71	2.356	0.078	6	CDF	7.9E-07	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9325	0.7	>>	Yes	Passes Criteria
PMSD	0.04483	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.84062	0.960156	4	439.3	<1.0E-37	Significant Effect
Error	0.0327836	0.0021856	15			
Total	3.87341		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.902	13.28	0.4194	Equal Variances
Variances	Levene Equality of Variance Test	4.631	4.893	0.0124	Equal Variances
Variances	Mod Levene Equality of Variance Test	2.692	4.893	0.0714	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.7434	3.878	0.0526	Normal Distribution
Distribution	D'Agostino Kurtosis Test	2.062	2.576	0.0392	Normal Distribution
Distribution	D'Agostino Skewness Test	0.2438	2.576	0.8074	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	4.313	9.21	0.1158	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.175	0.2235	0.1098	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9038	0.866	0.0486	Normal Distribution

Fertilization Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9325	0.8907	0.9743	0.9300	0.9100	0.9600	0.0132	2.82%	0.00%
18		4	0.9350	0.9019	0.9681	0.9350	0.9100	0.9600	0.0104	2.23%	-0.27%
32		4	0.7725	0.7168	0.8282	0.7900	0.7200	0.7900	0.0175	4.53%	17.16%
56		4	0.2525	0.2286	0.2764	0.2600	0.2300	0.2600	0.0075	5.94%	72.92%
100		4	0.0550	0.0091	0.1009	0.0550	0.0300	0.0800	0.0144	52.49%	94.10%
180		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 07-6626-8236 **Endpoint:** Fertilization Rate **CETIS Version:** CETISv1.9.2
Analyzed: 30 Aug-18 7:04 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.312	1.226	1.397	1.306	1.266	1.369	0.0268	4.09%	0.00%
18		4	1.315	1.247	1.384	1.313	1.266	1.369	0.02154	3.27%	-0.29%
32		4	1.074	1.009	1.139	1.095	1.013	1.095	0.02039	3.80%	18.10%
56		4	0.5263	0.4986	0.5541	0.5351	0.5002	0.5351	0.008723	3.31%	59.87%
100		4	0.2304	0.1269	0.3339	0.2304	0.1741	0.2868	0.03253	28.23%	82.43%
180		4	0.05002	0.05001	0.05003	0.05002	0.05002	0.05002	0	0.00%	96.19%

Fertilization Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9100	0.9500	0.9100	0.9600
18		0.9300	0.9400	0.9600	0.9100
32		0.7900	0.7200	0.7900	0.7900
56		0.2600	0.2300	0.2600	0.2600
100		0.0800	0.0300	0.0800	0.0300
180		0.0000	0.0000	0.0000	0.0000

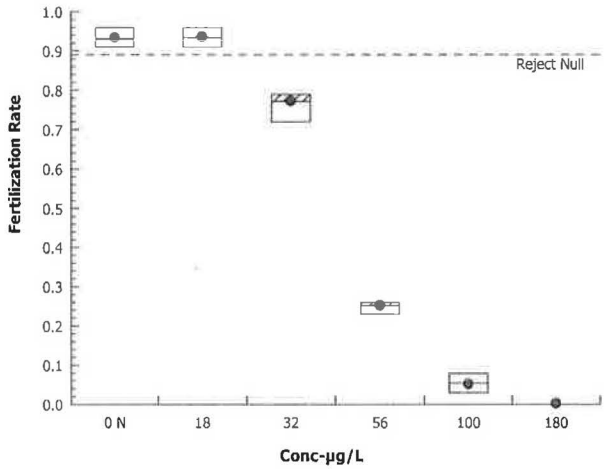
Angular (Corrected) Transformed Detail

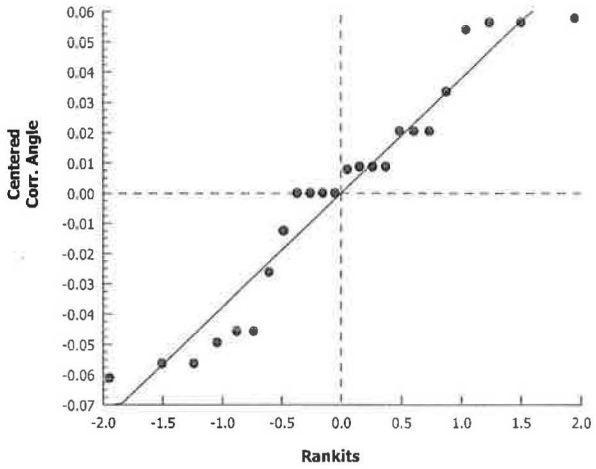
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.266	1.345	1.266	1.369
18		1.303	1.323	1.369	1.266
32		1.095	1.013	1.095	1.095
56		0.5351	0.5002	0.5351	0.5351
100		0.2868	0.1741	0.2868	0.1741
180		0.05002	0.05002	0.05002	0.05002

Fertilization Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	91/100	95/100	91/100	96/100
18		93/100	94/100	96/100	91/100
32		79/100	72/100	79/100	79/100
56		26/100	23/100	26/100	26/100
100		8/100	3/100	8/100	3/100
180		0/100	0/100	0/100	0/100

Graphics





Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	04-5291-7318	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:04	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	14-8021-1808	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	01-1339-1404	**Code:**	URC080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9325	0.7	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	22.05	18.69	23.24
EC10	26.11	22.76	28.48
EC15	30.16	26.15	33.38
EC20	33.18	29.69	34.92
EC25	35.33	32.53	36.91
EC40	41.8	39.71	42.93
EC50	46.11	44.39	47.08

Fertilization Rate Summary

			Calculated Variate(A/B)								
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9325	0.9100	0.9600	0.0132	0.0263	2.82%	0.0%	373	400
18		4	0.9350	0.9100	0.9600	0.0104	0.0208	2.23%	-0.27%	374	400
32		4	0.7725	0.7200	0.7900	0.0175	0.0350	4.53%	17.16%	309	400
56		4	0.2525	0.2300	0.2600	0.0075	0.0150	5.94%	72.92%	101	400
100		4	0.0550	0.0300	0.0800	0.0144	0.0289	52.49%	94.1%	22	400
180		4	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	400

Fertilization Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9100	0.9500	0.9100	0.9600
18		0.9300	0.9400	0.9600	0.9100
32		0.7900	0.7200	0.7900	0.7900
56		0.2600	0.2300	0.2600	0.2600
100		0.0800	0.0300	0.0800	0.0300
180		0.0000	0.0000	0.0000	0.0000

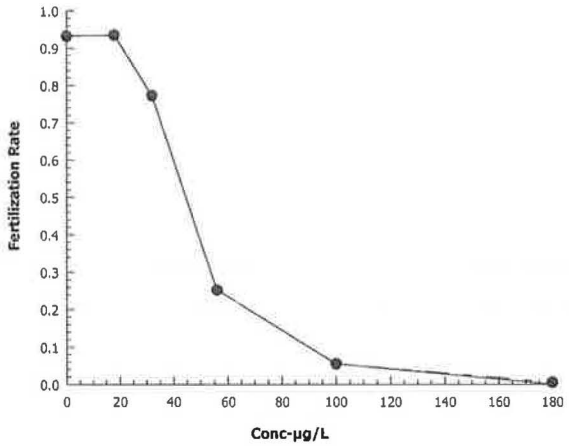
Fertilization Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	91/100	95/100	91/100	96/100
18		93/100	94/100	96/100	91/100
32		79/100	72/100	79/100	79/100
56		26/100	23/100	26/100	26/100
100		8/100	3/100	8/100	3/100
180		0/100	0/100	0/100	0/100

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	04-5291-7318	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:04	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	14-8021-1808	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	

Sample ID:	01-1339-1404	**Code:**	URC080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Parameter Acceptability Criteria

Parameter	Min	Max	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
Salinity	34	34	32	36	Yes	Passes Criteria
Temperature	14.6	14.8	11	13	Yes	Above Criteria

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.7	5.429	7.971	6.6	6.8	0.09999	0.1414	2.11%	0
18		2	6.55	4.644	8.456	6.4	6.7	0.15	0.2121	3.24%	0
32		2	6.7	5.429	7.971	6.6	6.8	0.09999	0.1414	2.11%	0
56		2	6.6	2.788	10.41	6.3	6.9	0.3	0.4243	6.43%	0
100		2	6.5	5.229	7.771	6.4	6.6	0.1	0.1414	2.18%	0
180		2	6.45	3.273	9.627	6.2	6.7	0.25	0.3536	5.48%	0
Overall		12	6.583	6.446	6.721	6.2	6.9	0.06256	0.2167	3.29%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
18		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
32		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
56		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
180		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
Overall		12	7.9	7.9	7.9	7.9	7.9	0	0	0.00%	0 (0%)

Salinity-ppt

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.0%	0
18		2	34	34	34	34	34	0	0	0.0%	0
32		2	34	34	34	34	34	0	0	0.0%	0
56		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
180		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
18		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
32		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
56		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
100		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
180		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
Overall		12	14.7	14.63	14.77	14.6	14.8	0.03015	0.1044	0.71%	0 (0%)

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-µg/L	Code	1	2
0	N	6.8	6.6
18		6.7	6.4
32		6.8	6.6
56		6.9	6.3
100		6.6	6.4
180		6.7	6.2

pH-Units

Conc-µg/L	Code	1	2
0	N	7.9	7.9
18		7.9	7.9
32		7.9	7.9
56		7.9	7.9
100		7.9	7.9
180		7.9	7.9

Salinity-ppt

Conc-µg/L	Code	1	2
0	N	34	34
18		34	34
32		34	34
56		34	34
100		34	34
180		34	34

Temperature-°C

Conc-µg/L	Code	1	2
0	N	14.8	14.6
18		14.8	14.6
32		14.8	14.6
56		14.8	14.6
100		14.8	14.6
180		14.8	14.6

aquatic bioassay & consulting laboratories, inc

CHRONIC KELP GERMINATION & GROWTH BIOASSAY

DATE: 2 August - 18

STANDARD TOXICANT: Copper Chloride

ENDPOINT: GERMINATION

NOEC = 100.00 ug/l

EC25 = 116.80 ug/l
EC50 = 147.10 ug/l

ENDPOINT: GROWTH-LENGTH

NOEC = 100.00 ug/l

IC25 = 116.10 ug/l
IC50 = 206.70 ug/l

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 aquabio.org

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-2321-7336	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:00	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	02-8694-9714	**Code:**	KLP080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
12-0634-4302	Germination Rate	Steel Many-One Rank Sum Test	100	180	134.2		6.61%	✓
19-0164-5125	Mean Length	Steel Many-One Rank Sum Test	100	180	134.2		11.0%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
00-0552-1189	Germination Rate	Linear Interpolation (ICPIN)	EC5	62.43	43.43	86.17		
			EC10	92.85	66.03	108.2		
			EC15	104.6	97.69	111		
			EC20	110.7	104.3	116.6		
			EC25	116.8	110.7	122.2		
			EC40	135	129.1	140.6		✓
			EC50	147.1	141.3	153.4		✓
01-7163-8594	Mean Length	Linear Interpolation (ICPIN)	IC5	47.7	38.18	69.58		✓
			IC10	63.4	50.48	107.2		✓
			IC15	79.1	61.69	126.3		✓
			IC20	94.8	73.1	141.4		✓
			IC25	116.1	81.51	153.7		✓
			IC40	184	170.3	192.1		
			IC50	206.7	197.6	213.4		

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
00-0552-1189	Germination Rate	Control Resp	0.884	0.7	>>	Yes	Passes Criteria
12-0634-4302	Germination Rate	Control Resp	0.884	0.7	>>	Yes	Passes Criteria
01-7163-8594	Mean Length	Control Resp	12.94	10	>>	Yes	Passes Criteria
19-0164-5125	Mean Length	Control Resp	12.94	10	>>	Yes	Passes Criteria
19-0164-5125	Mean Length	NOEL	100	<<	35	No	Above Criteria
12-0634-4302	Germination Rate	PMSD	0.06611	<<	0.2	No	Passes Criteria
19-0164-5125	Mean Length	PMSD	0.1096	<<	0.2	No	Passes Criteria

Macrocystis Germination and Germ Tube Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Germination Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.8840	0.7683	0.9997	0.7200	0.9500	0.0417	0.0932	10.54%	0.00%
5.6		5	0.9200	0.9076	0.9324	0.9100	0.9300	0.0045	0.0100	1.09%	-4.07%
10		5	0.9260	0.8988	0.9532	0.8900	0.9500	0.0098	0.0219	2.37%	-4.75%
18		5	0.9340	0.9098	0.9582	0.9100	0.9600	0.0087	0.0195	2.09%	-5.66%
32		5	0.9180	0.8976	0.9384	0.9000	0.9400	0.0073	0.0164	1.79%	-3.85%
100		5	0.8140	0.7609	0.8671	0.7700	0.8800	0.0191	0.0428	5.26%	7.92%
180		5	0.2100	0.1376	0.2824	0.1700	0.3100	0.0261	0.0583	27.77%	76.24%
320		5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Mean Length Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	12.94	10.61	15.27	9.6	13.9	0.8382	1.874	14.48%	0.00%
5.6		5	13.9	13.67	14.13	13.7	14.2	0.08367	0.1871	1.35%	-7.42%
10		5	13.64	13.41	13.87	13.4	13.9	0.08124	0.1817	1.33%	-5.41%
18		5	13.9	13.68	14.12	13.6	14	0.07746	0.1732	1.25%	-7.42%
32		5	13.78	13.44	14.12	13.3	14	0.1241	0.2775	2.01%	-6.49%
100		5	10.68	8.854	12.51	9.9	13.3	0.6576	1.47	13.77%	17.47%
180		5	8.42	7.828	9.012	7.6	8.8	0.2131	0.4764	5.66%	34.93%
320		5	0	0	0	0	0	0	0		100.00%

Germination Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.7200	0.9100	0.9500	0.9300	0.9100
5.6		0.9100	0.9300	0.9200	0.9300	0.9100
10		0.8900	0.9300	0.9500	0.9300	0.9300
18		0.9200	0.9400	0.9600	0.9100	0.9400
32		0.9100	0.9300	0.9400	0.9100	0.9000
100		0.8800	0.7700	0.7900	0.8000	0.8300
180		0.3100	0.1700	0.2100	0.1900	0.1700
320		0.0000	0.0000	0.0000	0.0000	0.0000

Mean Length Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	9.6	13.5	13.9	13.9	13.8
5.6		13.7	13.9	14.2	13.8	13.9
10		13.4	13.6	13.6	13.9	13.7
18		14	14	13.9	13.6	14
32		13.3	14	13.9	13.9	13.8
100		13.3	10.1	10.2	9.9	9.9
180		7.6	8.7	8.8	8.5	8.5
320		0	0	0	0	0

Germination Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	72/100	91/100	95/100	93/100	91/100
5.6		91/100	93/100	92/100	93/100	91/100
10		89/100	93/100	95/100	93/100	93/100
18		92/100	94/100	96/100	91/100	94/100
32		91/100	93/100	94/100	91/100	90/100
100		88/100	77/100	79/100	80/100	83/100
180		31/100	17/100	21/100	19/100	17/100
320		0/100	0/100	0/100	0/100	0/100

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	12-0634-4302	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	09-2321-7336	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:00	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	02-8694-9714	**Code:**	KLP080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	180	134.2		6.61%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		5.6	29	16	2	8	Asymp	0.9262	Non-Significant Effect
		10	31	16	2	8	Asymp	0.9749	Non-Significant Effect
		18	33	16	1	8	Asymp	0.9932	Non-Significant Effect
		32	27.5	16	2	8	Asymp	0.8571	Non-Significant Effect
		100	20	16	0	8	Asymp	0.2114	Non-Significant Effect
		180*	15	16	0	8	Asymp	0.0222	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.884	0.7	>>	Yes	Passes Criteria
PMSD	0.06611	<<	0.2	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.7482	0.458033	6	108.7	<1.0E-37	Significant Effect
Error	0.117946	0.0042124	28			
Total	2.86614		34			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	17.05	16.81	0.0091	Unequal Variances
Variances	Levene Equality of Variance Test	1.976	3.528	0.1030	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.8646	3.812	0.5366	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.993	3.878	0.0129	Normal Distribution
Distribution	D'Agostino Kurtosis Test	3.341	2.576	8.4E-04	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	2.858	2.576	0.0043	Non-Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	19.32	9.21	6.4E-05	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1211	0.1723	0.2088	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.8845	0.9146	0.0016	Non-Normal Distribution

Germination Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.8840	0.7683	0.9997	0.9100	0.7200	0.9500	0.0417	10.54%	0.00%
5.6		5	0.9200	0.9076	0.9324	0.9200	0.9100	0.9300	0.0045	1.09%	-4.07%
10		5	0.9260	0.8988	0.9532	0.9300	0.8900	0.9500	0.0098	2.37%	-4.75%
18		5	0.9340	0.9098	0.9582	0.9400	0.9100	0.9600	0.0087	2.09%	-5.66%
32		5	0.9180	0.8976	0.9384	0.9100	0.9000	0.9400	0.0073	1.79%	-3.85%
100		5	0.8140	0.7609	0.8671	0.8000	0.7700	0.8800	0.0191	5.26%	7.92%
180		5	0.2100	0.1376	0.2824	0.1900	0.1700	0.3100	0.0261	27.77%	76.24%
320		5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Macrocystis Germination and Germ Tube Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-0634-4302 Endpoint: Germination Rate CETIS Version: CETISv1.9.2
Analyzed: 30 Aug-18 7:14 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.239	1.077	1.4	1.266	1.013	1.345	0.05825	10.51%	0.00%
5.6		5	1.284	1.262	1.307	1.284	1.266	1.303	0.008258	1.44%	-3.69%
10		5	1.297	1.247	1.348	1.303	1.233	1.345	0.01812	3.12%	-4.74%
18		5	1.313	1.263	1.363	1.323	1.266	1.369	0.01794	3.05%	-6.01%
32		5	1.282	1.244	1.319	1.266	1.249	1.323	0.01368	2.39%	-3.45%
100		5	1.127	1.056	1.198	1.107	1.071	1.217	0.02557	5.07%	9.01%
180		5	0.4735	0.3881	0.5589	0.451	0.425	0.5905	0.03075	14.52%	61.78%
320		5	0.05002	0.05001	0.05003	0.05002	0.05002	0.05002	0	0.00%	95.96%

Germination Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.7200	0.9100	0.9500	0.9300	0.9100
5.6		0.9100	0.9300	0.9200	0.9300	0.9100
10		0.8900	0.9300	0.9500	0.9300	0.9300
18		0.9200	0.9400	0.9600	0.9100	0.9400
32		0.9100	0.9300	0.9400	0.9100	0.9000
100		0.8800	0.7700	0.7900	0.8000	0.8300
180		0.3100	0.1700	0.2100	0.1900	0.1700
320		0.0000	0.0000	0.0000	0.0000	0.0000

Angular (Corrected) Transformed Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.013	1.266	1.345	1.303	1.266
5.6		1.266	1.303	1.284	1.303	1.266
10		1.233	1.303	1.345	1.303	1.303
18		1.284	1.323	1.369	1.266	1.323
32		1.266	1.303	1.323	1.266	1.249
100		1.217	1.071	1.095	1.107	1.146
180		0.5905	0.425	0.476	0.451	0.425
320		0.05002	0.05002	0.05002	0.05002	0.05002

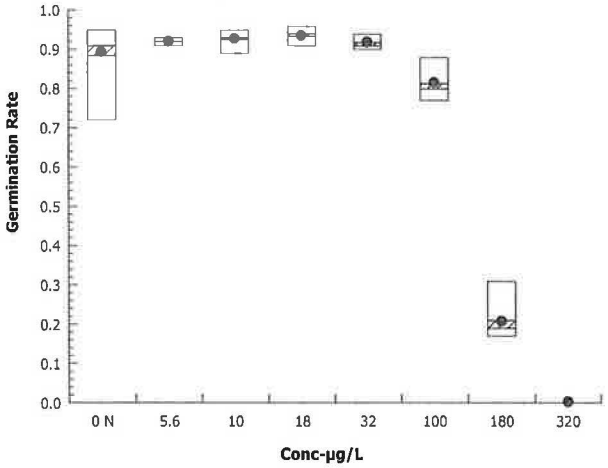
Germination Rate Binomials

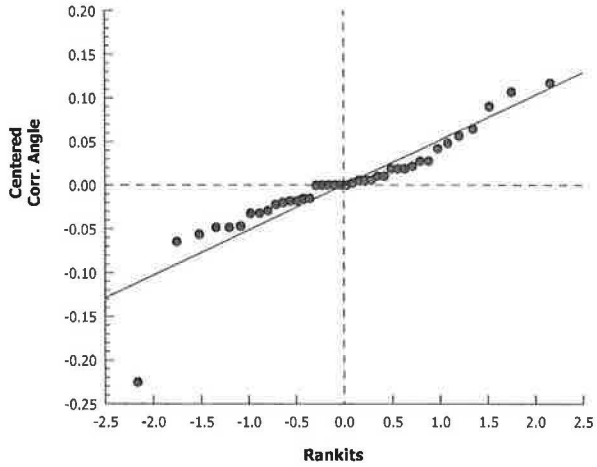
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	72/100	91/100	95/100	93/100	91/100
5.6		91/100	93/100	92/100	93/100	91/100
10		89/100	93/100	95/100	93/100	93/100
18		92/100	94/100	96/100	91/100	94/100
32		91/100	93/100	94/100	91/100	90/100
100		88/100	77/100	79/100	80/100	83/100
180		31/100	17/100	21/100	19/100	17/100
320		0/100	0/100	0/100	0/100	0/100

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	12-0634-4302	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-0164-5125	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	09-2321-7336	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:00	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	02-8694-9714	**Code:**	KLP080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	180	134.2		10.96%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		5.6	32.5	16	3	8	Asymp	0.9904	Non-Significant Effect
		10	26	16	2	8	Asymp	0.7547	Non-Significant Effect
		18	36	16	2	8	Asymp	0.9994	Non-Significant Effect
		32	31.5	16	3	8	Asymp	0.9815	Non-Significant Effect
		100	20	16	0	8	Asymp	0.2114	Non-Significant Effect
		180*	15	16	0	8	Asymp	0.0222	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	12.94	10	>>	Yes	Passes Criteria
NOEL	100	<<	35	No	Above Criteria
PMSD	0.1096	<<	0.2	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	135.011	22.5018	6	25.92	<1.0E-37	Significant Effect
Error	24.308	0.868143	28			
Total	159.319		34			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	41.27	16.81	2.9E-07	Unequal Variances
Variances	Levene Equality of Variance Test	4.027	3.528	0.0050	Unequal Variances
Variances	Mod Levene Equality of Variance Test	0.7755	3.812	0.5980	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	2.609	3.878	<1.0E-37	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	3.958	2.576	7.6E-05	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	2.308	2.576	0.0210	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	20.99	9.21	2.8E-05	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1899	0.1723	0.0026	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.7857	0.9146	1.1E-05	Non-Normal Distribution

Mean Length Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	12.94	10.61	15.27	13.8	9.6	13.9	0.8382	14.48%	0.00%
5.6		5	13.9	13.67	14.13	13.9	13.7	14.2	0.08367	1.35%	-7.42%
10		5	13.64	13.41	13.87	13.6	13.4	13.9	0.08123	1.33%	-5.41%
18		5	13.9	13.68	14.12	14	13.6	14	0.07746	1.25%	-7.42%
32		5	13.78	13.44	14.12	13.9	13.3	14	0.1241	2.01%	-6.49%
100		5	10.68	8.854	12.51	10.1	9.9	13.3	0.6576	13.77%	17.47%
180		5	8.42	7.828	9.012	8.5	7.6	8.8	0.2131	5.66%	34.93%
320		5	0	0	0	0	0	0	0		100.00%

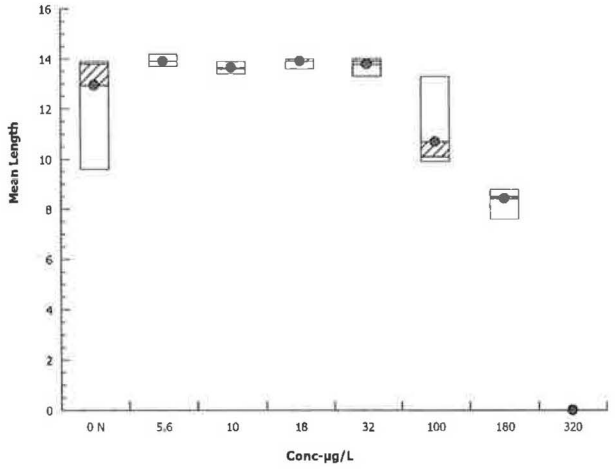
Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

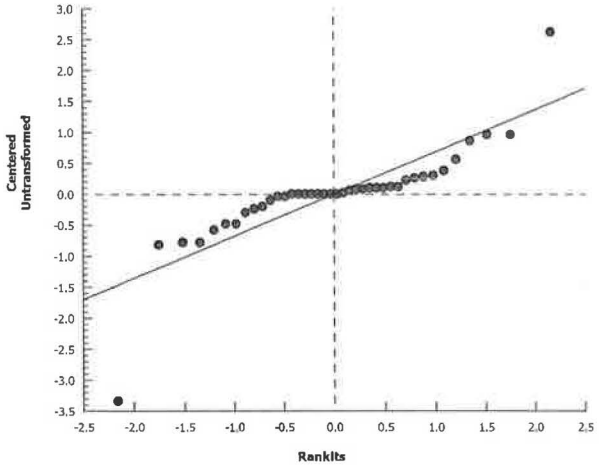
Analysis ID:	19-0164-5125	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Mean Length Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	9.6	13.5	13.9	13.9	13.8
5.6		13.7	13.9	14.2	13.8	13.9
10		13.4	13.6	13.6	13.9	13.7
18		14	14	13.9	13.6	14
32		13.3	14	13.9	13.9	13.8
100		13.3	10.1	10.2	9.9	9.9
180		7.6	8.7	8.8	8.5	8.5
320		0	0	0	0	0

Graphics





Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	00-0552-1189	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	09-2321-7336	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:00	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	02-8694-9714	**Code:**	KLP080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.884	0.7	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	62.43	43.43	86.17
EC10	92.85	66.03	108.2
EC15	104.6	97.69	111
EC20	110.7	104.3	116.6
EC25	116.8	110.7	122.2
EC40	135	129.1	140.6
EC50	147.1	141.3	153.4

Germination Rate Summary

			Calculated Variate(A/B)								
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	5	0.8840	0.7200	0.9500	0.0417	0.0932	10.54%	0.0%	442	500
5.6		5	0.9200	0.9100	0.9300	0.0045	0.0100	1.09%	-4.07%	460	500
10		5	0.9260	0.8900	0.9500	0.0098	0.0219	2.37%	-4.75%	463	500
18		5	0.9340	0.9100	0.9600	0.0087	0.0195	2.09%	-5.66%	467	500
32		5	0.9180	0.9000	0.9400	0.0073	0.0164	1.79%	-3.85%	459	500
100		5	0.8140	0.7700	0.8800	0.0191	0.0428	5.26%	7.92%	407	500
180		5	0.2100	0.1700	0.3100	0.0261	0.0583	27.77%	76.24%	105	500
320		5	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	500

Germination Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.7200	0.9100	0.9500	0.9300	0.9100
5.6		0.9100	0.9300	0.9200	0.9300	0.9100
10		0.8900	0.9300	0.9500	0.9300	0.9300
18		0.9200	0.9400	0.9600	0.9100	0.9400
32		0.9100	0.9300	0.9400	0.9100	0.9000
100		0.8800	0.7700	0.7900	0.8000	0.8300
180		0.3100	0.1700	0.2100	0.1900	0.1700
320		0.0000	0.0000	0.0000	0.0000	0.0000

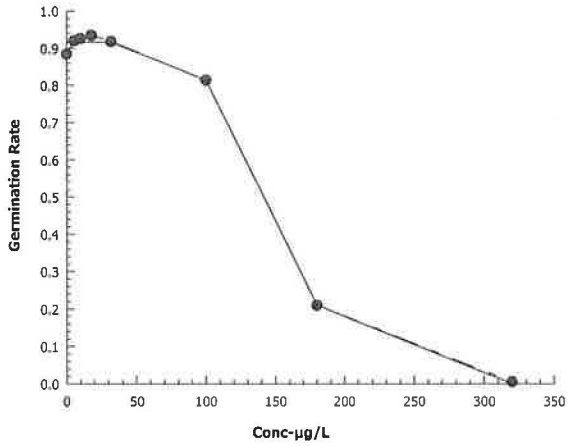
Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	00-0552-1189	**Endpoint:**	Germination Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Germination Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	72/100	91/100	95/100	93/100	91/100
5.6		91/100	93/100	92/100	93/100	91/100
10		89/100	93/100	95/100	93/100	93/100
18		92/100	94/100	96/100	91/100	94/100
32		91/100	93/100	94/100	91/100	90/100
100		88/100	77/100	79/100	80/100	83/100
180		31/100	17/100	21/100	19/100	17/100
320		0/100	0/100	0/100	0/100	0/100

Graphics



Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-7163-8594	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	09-2321-7336	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:00	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	
Sample ID:	02-8694-9714	**Code:**	KLP080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1754281	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	12.94	10	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	47.7	38.18	69.58
IC10	63.4	50.48	107.2
IC15	79.1	61.69	126.3
IC20	94.8	73.1	141.4
IC25	116.1	81.51	153.7
IC40	184	170.3	192.1
IC50	206.7	197.6	213.4

Mean Length Summary

			Calculated Variate						
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	5	12.94	9.6	13.9	0.8382	1.874	14.48%	0.0%
5.6		5	13.9	13.7	14.2	0.08367	0.1871	1.35%	-7.42%
10		5	13.64	13.4	13.9	0.08123	0.1816	1.33%	-5.41%
18		5	13.9	13.6	14	0.07746	0.1732	1.25%	-7.42%
32		5	13.78	13.3	14	0.1241	0.2775	2.01%	-6.49%
100		5	10.68	9.9	13.3	0.6576	1.47	13.77%	17.47%
180		5	8.42	7.6	8.8	0.2131	0.4764	5.66%	34.93%
320		5	0	0	0	0	0		100.0%

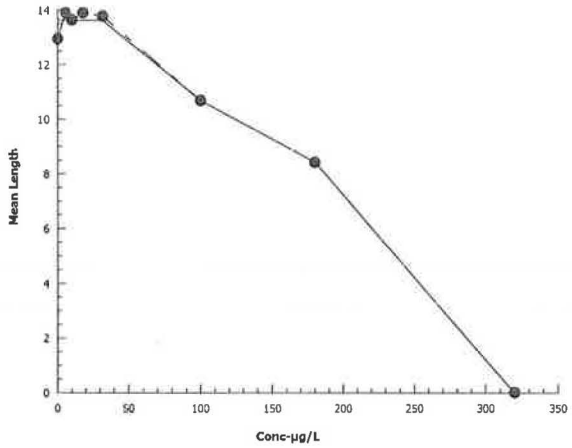
Mean Length Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	9.6	13.5	13.9	13.9	13.8
5.6		13.7	13.9	14.2	13.8	13.9
10		13.4	13.6	13.6	13.9	13.7
18		14	14	13.9	13.6	14
32		13.3	14	13.9	13.9	13.8
100		13.3	10.1	10.2	9.9	9.9
180		7.6	8.7	8.8	8.5	8.5
320		0	0	0	0	0

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-7163-8594	**Endpoint:**	Mean Length	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 7:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-2321-7336	**Test Type:**	Growth-Germination	**Analyst:**	
Start Date:	02 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 13:00	**Species:**	Macrocystis pyrifera	**Brine:**	Not Applicable
Duration:	48h	**Source:**	David Gutoff	**Age:**	

Sample ID:	02-8694-9714	**Code:**	KLP080218	**Client:**	Internal Lab
Sample Date:	02 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.7	5.429	7.971	6.6	6.8	0.09999	0.1414	2.11%	0
5.6		2	6.6	5.329	7.871	6.5	6.7	0.1	0.1414	2.14%	0
10		2	6.55	3.373	9.727	6.3	6.8	0.25	0.3536	5.4%	0
18		2	6.55	4.644	8.456	6.4	6.7	0.15	0.2121	3.24%	0
32		2	6.7	5.429	7.971	6.6	6.8	0.09999	0.1414	2.11%	0
100		2	6.5	5.229	7.771	6.4	6.6	0.1	0.1414	2.18%	0
180		2	6.45	3.273	9.627	6.2	6.7	0.25	0.3536	5.48%	0
320		2	6.55	3.373	9.727	6.3	6.8	0.25	0.3536	5.4%	0
Overall		16	6.575	6.468	6.682	6.2	6.8	0.05041	0.2017	3.07%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
5.6		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
10		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
18		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
32		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
180		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
320		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
Overall		16	7.9	7.9	7.9	7.9	7.9	0	0	0.00%	0 (0%)

Salinity-ppt

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.0%	0
5.6		2	34	34	34	34	34	0	0	0.0%	0
10		2	34	34	34	34	34	0	0	0.0%	0
18		2	34	34	34	34	34	0	0	0.0%	0
32		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
180		2	34	34	34	34	34	0	0	0.0%	0
320		2	34	34	34	34	34	0	0	0.0%	0
Overall		16	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
5.6		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
10		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
18		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
32		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
100		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
180		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
320		2	14.7	13.43	15.97	14.6	14.8	0.09999	0.1414	0.96%	0
Overall		16	14.7	14.64	14.76	14.6	14.8	0.02582	0.1033	0.70%	0 (0%)

Macrocystis Germination and Germ Tube Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-µg/L	Code	1	2
0	N	6.8	6.6
5.6		6.7	6.5
10		6.8	6.3
18		6.7	6.4
32		6.8	6.6
100		6.6	6.4
180		6.7	6.2
320		6.8	6.3

pH-Units

Conc-µg/L	Code	1	2
0	N	7.9	7.9
5.6		7.9	7.9
10		7.9	7.9
18		7.9	7.9
32		7.9	7.9
100		7.9	7.9
180		7.9	7.9
320		7.9	7.9

Salinity-ppt

Conc-µg/L	Code	1	2
0	N	34	34
5.6		34	34
10		34	34
18		34	34
32		34	34
100		34	34
180		34	34
320		34	34

Temperature-°C

Conc-µg/L	Code	1	2
0	N	14.8	14.6
5.6		14.8	14.6
10		14.8	14.6
18		14.8	14.6
32		14.8	14.6
100		14.8	14.6
180		14.8	14.6
320		14.8	14.6

aquatic bioassay & consulting laboratories, inc

ACUTE SILVERSIDE MINNOW SURVIVAL AND GROWTH BIOASSAY

31 July - 2018

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 100.00 ug/l

EC25 = 140.00 ug/l
EC50 = 180.00 ug/l

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 aquabio.org

CETIS Summary Report

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	12-1379-8936	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	31 Jul-18 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 14:53	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-3468-5245	**Code:**	MEN073118act	**Client:**	Internal Lab
Sample Date:	31 Jul-18 15:50	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
09-5903-2322	96h Survival Rate	Dunnett Multiple Comparison Test	100	180	134.2		17.7%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU ✓
09-5195-3930	96h Survival Rate	Linear Interpolation (ICPIN)	EC5	108	102.9	114.7	
			EC10	116	108.3	129.3	
			EC15	124	112.6	144	
			EC20	132	116.7	158.6	
			EC25	140	121	174.6	
			EC40	164	133.7	214.6	
			EC50	180	142.1	238.2	

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
09-5195-3930	96h Survival Rate	Control Resp	0.9	0.9	>>	Yes	Passes Criteria
09-5903-2322	96h Survival Rate	Control Resp	0.9	0.9	>>	Yes	Passes Criteria

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9000	0.7701	1.0000	0.8000	1.0000	0.0408	0.0817	9.07%	0.00%
32		4	0.9500	0.8581	1.0000	0.9000	1.0000	0.0289	0.0577	6.08%	-5.56%
56		4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	-8.33%
100		4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	-8.33%
180		4	0.4750	0.1470	0.8030	0.2000	0.7000	0.1031	0.2062	43.40%	47.22%
320		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.8000	1.0000	0.9000	0.9000
32		1.0000	0.9000	0.9000	1.0000
56		0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.9000	1.0000
180		0.7000	0.5000	0.2000	0.5000
320		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	8/10	10/10	9/10	9/10
32		10/10	9/10	9/10	10/10
56		9/10	10/10	10/10	10/10
100		10/10	10/10	9/10	10/10
180		7/10	5/10	2/10	5/10
320		0/10	0/10	0/10	0/10

Analyst: _____ QA: PASS

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	09-5903-2322	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	28 Aug-18 14:32	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	12-1379-8936	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	31 Jul-18 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 14:53	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-3468-5245	**Code:**	MEN073118act	**Client:**	Internal Lab
Sample Date:	31 Jul-18 15:50	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	180	134.2		17.66%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		32	-0.8259	2.356	0.217	6	CDF	0.9620	Non-Significant Effect
		56	-1.267	2.356	0.217	6	CDF	0.9874	Non-Significant Effect
		100	-1.267	2.356	0.217	6	CDF	0.9874	Non-Significant Effect
		180*	5.396	2.356	0.217	6	CDF	1.4E-04	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.09614	0.274034	4	16.09	2.7E-05	Significant Effect
Error	0.255478	0.0170319	15			
Total	1.35161		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.249	13.28	0.3734	Equal Variances
Variances	Levene Equality of Variance Test	0.8402	4.893	0.5209	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6042	4.893	0.6656	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.8529	3.878	0.0282	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.32	2.576	0.1870	Normal Distribution
Distribution	D'Agostino Skewness Test	1:11	2.576	0.2669	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	2.974	9.21	0.2261	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1987	0.2235	0.0373	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9316	0.866	0.1659	Normal Distribution

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9000	0.7701	1.0000	0.9000	0.8000	1.0000	0.0408	9.07%	0.00%
32		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	-5.56%
56		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	-8.33%
100		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	-8.33%
180		4	0.4750	0.1470	0.8030	0.5000	0.2000	0.7000	0.1031	43.40%	47.22%
320		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 09-5903-2322 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 28 Aug-18 14:32 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.254	1.056	1.453	1.249	1.107	1.412	0.06231	9.93%	0.00%
32		4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	-6.08%
56		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	-9.32%
100		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	-9.32%
180		4	0.7564	0.4096	1.103	0.7854	0.4636	0.9912	0.109	28.81%	39.70%
320		4	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.00%	87.34%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.8000	1.0000	0.9000	0.9000
32		1.0000	0.9000	0.9000	1.0000
56		0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.9000	1.0000
180		0.7000	0.5000	0.2000	0.5000
320		0.0000	0.0000	0.0000	0.0000

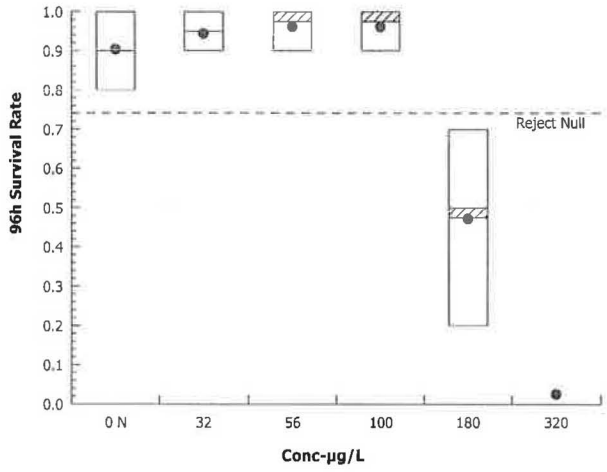
Angular (Corrected) Transformed Detail

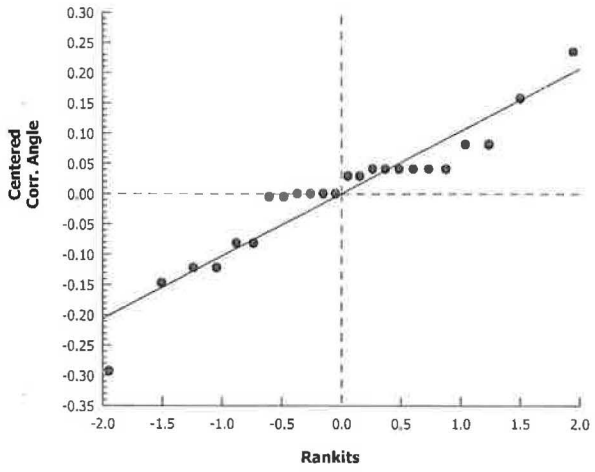
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.107	1.412	1.249	1.249
32		1.412	1.249	1.249	1.412
56		1.249	1.412	1.412	1.412
100		1.412	1.412	1.249	1.412
180		0.9912	0.7854	0.4636	0.7854
320		0.1588	0.1588	0.1588	0.1588

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	8/10	10/10	9/10	9/10
32		10/10	9/10	9/10	10/10
56		9/10	10/10	10/10	10/10
100		10/10	10/10	9/10	10/10
180		7/10	5/10	2/10	5/10
320		0/10	0/10	0/10	0/10

Graphics





Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	09-5195-3930	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	28 Aug-18 14:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	12-1379-8936	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	31 Jul-18 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 14:53	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	00-3468-5245	**Code:**	MEN073118act	**Client:**	Internal Lab
Sample Date:	31 Jul-18 15:50	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	108	102.9	114.7
EC10	116	108.3	129.3
EC15	124	112.6	144
EC20	132	116.7	158.6
EC25	140	121	174.6
EC40	164	133.7	214.6
EC50	180	142.1	238.2

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9000	0.8000	1.0000	0.0408	0.0817	9.07%	0.0%	36	40
32		4	0.9500	0.9000	1.0000	0.0289	0.0577	6.08%	-5.56%	38	40
56		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	-8.33%	39	40
100		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	-8.33%	39	40
180		4	0.4750	0.2000	0.7000	0.1031	0.2062	43.40%	47.22%	19	40
320		4	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	40

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.8000	1.0000	0.9000	0.9000
32		1.0000	0.9000	0.9000	1.0000
56		0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.9000	1.0000
180		0.7000	0.5000	0.2000	0.5000
320		0.0000	0.0000	0.0000	0.0000

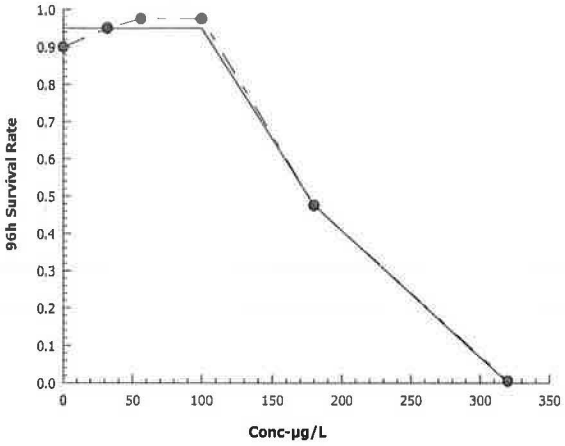
96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	8/10	10/10	9/10	9/10
32		10/10	9/10	9/10	10/10
56		9/10	10/10	10/10	10/10
100		10/10	10/10	9/10	10/10
180		7/10	5/10	2/10	5/10
320		0/10	0/10	0/10	0/10

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	09-5195-3930	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	28 Aug-18 14:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	12-1379-8936	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	31 Jul-18 15:50	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	04 Aug-18 14:53	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	95h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	00-3468-5245	**Code:**	MEN073118act	**Client:**	Internal Lab
Sample Date:	31 Jul-18 15:50	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	26.93	-61.42	115.3	6.2	68	20.53	35.57	132.0%	0
32		3	6.333	5.299	7.368	6	6.8	0.2404	0.4163	6.57%	0
56		3	6.3	5.217	7.383	6	6.8	0.2517	0.4359	6.92%	0
100		3	6.333	5.329	7.337	6.1	6.8	0.2333	0.4041	6.38%	0
180		3	6.367	5.219	7.514	6.1	6.9	0.2667	0.4619	7.26%	0
320		3	6.433	5.561	7.306	6.1	6.8	0.2028	0.3512	5.46%	0
Overall		18	9.783	2.556	17.01	6	68	3.425	14.53	148.50%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.667	7.523	7.81	7.6	7.7	0.03333	0.05773	0.75%	0
32		3	7.7	7.452	7.948	7.6	7.8	0.05774	0.1	1.3%	0
56		3	7.667	7.523	7.81	7.6	7.7	0.03333	0.05773	0.75%	0
100		3	7.667	7.523	7.81	7.6	7.7	0.03333	0.05773	0.75%	0
180		3	7.7	7.452	7.948	7.6	7.8	0.05774	0.1	1.3%	0
320		3	7.667	7.523	7.81	7.6	7.7	0.03333	0.05773	0.75%	0
Overall		18	7.678	7.646	7.71	7.6	7.8	0.01524	0.06468	0.84%	0 (0%)

Salinity-ppt

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	25	25	25	25	25	0	0	0.0%	0
32		3	25	25	25	25	25	0	0	0.0%	0
56		3	25	25	25	25	25	0	0	0.0%	0
100		3	25	25	25	25	25	0	0	0.0%	0
180		3	25	25	25	25	25	0	0	0.0%	0
320		3	25	25	25	25	25	0	0	0.0%	0
Overall		18	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	24	24	24	24	24	0	0	0.0%	0
32		3	24	24	24	24	24	0	0	0.0%	0
56		3	24	24	24	24	24	0	0	0.0%	0
100		3	24	24	24	24	24	0	0	0.0%	0
180		3	24	24	24	24	24	0	0	0.0%	0
320		3	24	24	24	24	24	0	0	0.0%	0
Overall		18	24	24	24	24	24	0	0	0.00%	0 (0%)

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-µg/L	Code	1	2	3
0	N	68	6.2	6.6
32		6.8	6.2	6
56		6.8	6.1	6
100		6.8	6.1	6.1
180		6.9	6.1	6.1
320		6.8	6.1	6.4

pH-Units

Conc-µg/L	Code	1	2	3
0	N	7.6	7.7	7.7
32		7.6	7.8	7.7
56		7.6	7.7	7.7
100		7.6	7.7	7.7
180		7.6	7.7	7.8
320		7.6	7.7	7.7

Salinity-ppt

Conc-µg/L	Code	1	2	3
0	N	25	25	25
32		25	25	25
56		25	25	25
100		25	25	25
180		25	25	25
320		25	25	25

Temperature-°C

Conc-µg/L	Code	1	2	3
0	N	24	24	24
32		24	24	24
56		24	24	24
100		24	24	24
180		24	24	24
320		24	24	24

aquatic bioassay & consulting laboratories, inc

September 17, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Marine and Freshwater Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-5135 Pismo Beach)
DATE RECEIVED:	14 Aug - 18
ABC LAB. NO.:	ACB0818.205

ACUTE SILVERSIDES LARVAE SURVIVAL BIOASSAY

SURVIVAL = 22.50 % Survival in 100 % Sample

EC25 = 61.56 %
EC50 = 71.88 %
*TUa = 1.391
* TU(a) Is calculated by: 100/EC50

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	07-0040-1687	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	14 Aug-18 16:35	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Aug-18 16:09	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	11-3996-2960	**Code:**	ACB0818.205amen	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
06-3849-4202	96h Survival Rate	Dunnett Multiple Comparison Test	55	77.5	65.29	1.818	11.4%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
06-7273-0204	96h Survival Rate	Linear Interpolation (ICPIN)	EC5	27.33	n/a	73	3.66
			EC10	55.38	18.77	59.19	1.806
			EC15	57.44	43.19	61.35	1.741
			EC20	59.5	54.1	63.52	1.681
			EC25	61.56	56.69	65.56	1.624
			EC40	67.75	63.08	72.95	1.476
			EC50	71.88	66.79	78.23	1.391

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
06-3849-4202	96h Survival Rate	Control Resp	0.95	0.9	>>	Yes	Passes Criteria
06-7273-0204	96h Survival Rate	Control Resp	0.95	0.9	>>	Yes	Passes Criteria

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9500	0.8581	1.0000	0.9000	1.0000	0.0289	0.0577	6.08%	0.00%
10		4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	-2.63%
32.5		4	0.9000	0.9000	0.9000	0.9000	0.9000	0.0000	0.0000	0.00%	5.26%
55		4	0.8750	0.7227	1.0000	0.8000	1.0000	0.0479	0.0957	10.94%	7.89%
77.5		4	0.3500	0.1446	0.5554	0.2000	0.5000	0.0646	0.1291	36.89%	63.16%
100		4	0.2250	0.1454	0.3046	0.2000	0.3000	0.0250	0.0500	22.22%	76.32%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	0.9000	1.0000	0.9000
10		1.0000	1.0000	1.0000	0.9000
32.5		0.9000	0.9000	0.9000	0.9000
55		1.0000	0.8000	0.8000	0.9000
77.5		0.2000	0.5000	0.4000	0.3000
100		0.2000	0.2000	0.3000	0.2000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	9/10	10/10	9/10
10		10/10	10/10	10/10	9/10
32.5		9/10	9/10	9/10	9/10
55		10/10	8/10	8/10	9/10
77.5		2/10	5/10	4/10	3/10
100		2/10	2/10	3/10	2/10

CETIS Analytical Report

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	06-3849-4202	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 11:53	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	07-0040-1687	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	14 Aug-18 16:35	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Aug-18 16:09	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	11-3996-2960	**Code:**	ACB0818.205amen	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	55	77.5	65.29	1.818	11.39%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	-0.5809	2.407	0.169	6	CDF	0.9500	Non-Significant Effect
		32.5	1.162	2.407	0.169	6	CDF	0.3527	Non-Significant Effect
		55	1.592	2.407	0.169	6	CDF	0.1996	Non-Significant Effect
		77.5*	10.01	2.407	0.169	6	CDF	2.7E-05	Significant Effect
		100*	11.95	2.407	0.169	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.95	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.95383	0.590766	5	60.05	<1.0E-37	Significant Effect
Error	0.17709	0.0098383	18			
Total	3.13092		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	3.916	4.248	0.0141	Equal Variances
Variances	Mod Levene Equality of Variance Test	2.385	4.248	0.0794	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.246	3.878	0.7844	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1479	2.576	0.8824	Normal Distribution
Distribution	D'Agostino Skewness Test	0.4534	2.576	0.6502	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.2275	9.21	0.8925	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.08333	0.2056	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9797	0.884	0.8896	Normal Distribution

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	0.00%
10		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	-2.63%
32.5		4	0.9000	0.8998	0.9002	0.9000	0.9000	0.9000	0.0000	0.00%	5.26%
55		4	0.8750	0.7227	1.0000	0.8500	0.8000	1.0000	0.0479	10.94%	7.89%
77.5		4	0.3500	0.1446	0.5554	0.3500	0.2000	0.5000	0.0646	36.89%	63.16%
100		4	0.2250	0.1454	0.3046	0.2000	0.2000	0.3000	0.0250	22.22%	76.32%

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	06-3849-4202	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 11:53	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	0.00%
10		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	-3.06%
32.5		4	1.249	1.249	1.249	1.249	1.249	1.249	0	0.00%	6.12%
55		4	1.219	0.9879	1.45	1.178	1.107	1.412	0.07256	11.91%	8.39%
77.5		4	0.6284	0.4084	0.8483	0.6322	0.4636	0.7854	0.06913	22.00%	52.77%
100		4	0.4926	0.4004	0.5849	0.4636	0.4636	0.5796	0.029	11.77%	62.97%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	0.9000	1.0000	0.9000
10		1.0000	1.0000	1.0000	0.9000
32.5		0.9000	0.9000	0.9000	0.9000
55		1.0000	0.8000	0.8000	0.9000
77.5		0.2000	0.5000	0.4000	0.3000
100		0.2000	0.2000	0.3000	0.2000

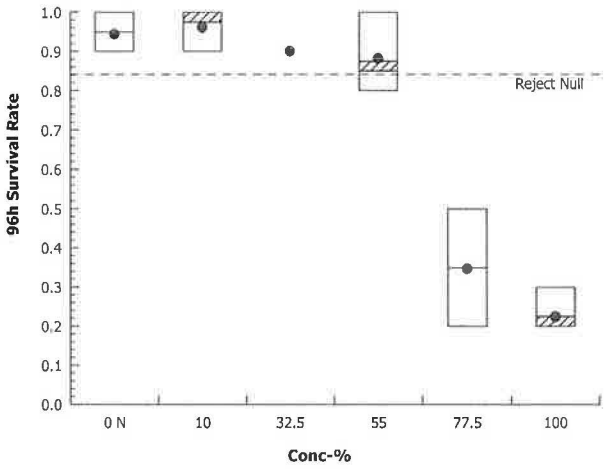
Angular (Corrected) Transformed Detail

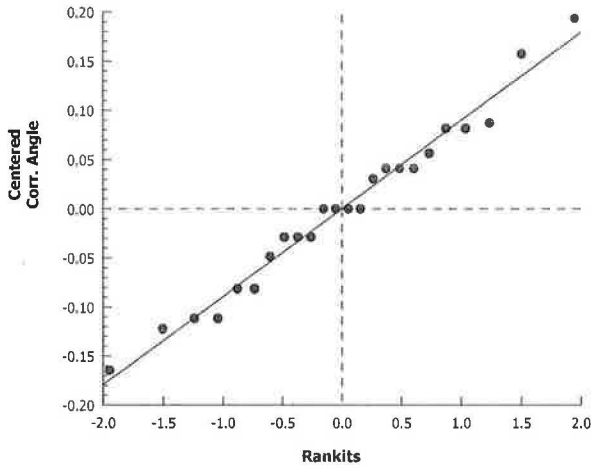
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.412	1.249	1.412	1.249
10		1.412	1.412	1.412	1.249
32.5		1.249	1.249	1.249	1.249
55		1.412	1.107	1.107	1.249
77.5		0.4636	0.7854	0.6847	0.5796
100		0.4636	0.4636	0.5796	0.4636

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	9/10	10/10	9/10
10		10/10	10/10	10/10	9/10
32.5		9/10	9/10	9/10	9/10
55		10/10	8/10	8/10	9/10
77.5		2/10	5/10	4/10	3/10
100		2/10	2/10	3/10	2/10

Graphics





CETIS Analytical Report

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	06-7273-0204	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 11:53	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	07-0040-1687	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	14 Aug-18 16:35	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Aug-18 16:09	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	11-3996-2960	**Code:**	ACB0818.205amen	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.95	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	27.33	n/a	73	3.66	1.37	n/a
EC10	55.38	18.77	59.19	1.806	1.689	5.326
EC15	57.44	43.19	61.35	1.741	1.63	2.315
EC20	59.5	54.1	63.52	1.681	1.574	1.848
EC25	61.56	56.69	65.56	1.624	1.525	1.764
EC40	67.75	63.08	72.95	1.476	1.371	1.585
EC50	71.88	66.79	78.23	1.391	1.278	1.497

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9500	0.9000	1.0000	0.0289	0.0577	6.08%	0.0%	38	40
10		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	-2.63%	39	40
32.5		4	0.9000	0.9000	0.9000	0.0000	0.0000	0.00%	5.26%	36	40
55		4	0.8750	0.8000	1.0000	0.0479	0.0957	10.94%	7.9%	35	40
77.5		4	0.3500	0.2000	0.5000	0.0646	0.1291	36.89%	63.16%	14	40
100		4	0.2250	0.2000	0.3000	0.0250	0.0500	22.22%	76.32%	9	40

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	0.9000	1.0000	0.9000
10		1.0000	1.0000	1.0000	0.9000
32.5		0.9000	0.9000	0.9000	0.9000
55		1.0000	0.8000	0.8000	0.9000
77.5		0.2000	0.5000	0.4000	0.3000
100		0.2000	0.2000	0.3000	0.2000

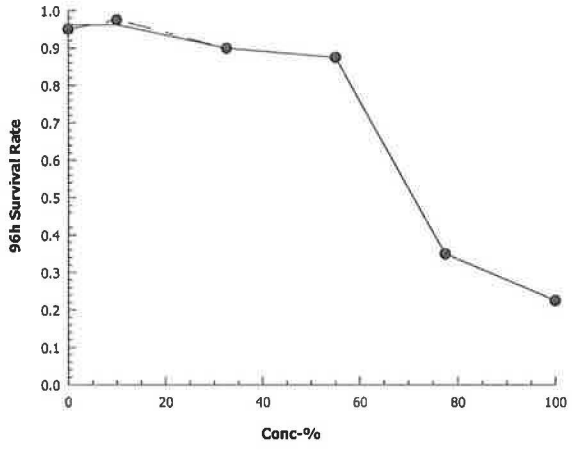
96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	9/10	10/10	9/10
10		10/10	10/10	10/10	9/10
32.5		9/10	9/10	9/10	9/10
55		10/10	8/10	8/10	9/10
77.5		2/10	5/10	4/10	3/10
100		2/10	2/10	3/10	2/10

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	06-7273-0204	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	30 Aug-18 11:53	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	07-0040-1687	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	14 Aug-18 16:35	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	18 Aug-18 16:09	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	11-3996-2960	**Code:**	ACB0818.205amen	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	6.3	5.87	6.73	6.2	6.5	0.1	0.1732	2.75%	0
10		3	6.467	5.432	7.501	6	6.8	0.2404	0.4163	6.44%	0
32.5		3	6.3	5.217	7.383	5.8	6.6	0.2517	0.4359	6.92%	0
55		3	6.467	4.813	8.121	5.7	6.9	0.3844	0.6658	10.3%	0
77.5		3	6.333	3.895	8.772	5.2	6.9	0.5667	0.9815	15.5%	0
100		3	6.467	3.302	9.632	5	7.3	0.7356	1.274	19.7%	0
Overall		18	6.389	6.071	6.707	5	7.3	0.1508	0.6398	10.01%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.7	7.452	7.948	7.6	7.8	0.05774	0.1	1.3%	0
10		3	7.733	7.59	7.877	7.7	7.8	0.03334	0.05774	0.75%	0
32.5		3	7.633	7.254	8.013	7.5	7.8	0.08819	0.1528	2.0%	0
55		3	7.6	7.103	8.097	7.4	7.8	0.1155	0.2	2.63%	0
77.5		3	7.567	7.05	8.084	7.4	7.8	0.1202	0.2082	2.75%	0
100		3	7.533	6.908	8.158	7.3	7.8	0.1453	0.2517	3.34%	0
Overall		18	7.628	7.546	7.709	7.3	7.8	0.03861	0.1638	2.15%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	25	25	25	25	25	0	0	0.0%	0
10		3	25	25	25	25	25	0	0	0.0%	0
32.5		3	25	25	25	25	25	0	0	0.0%	0
55		3	25	25	25	25	25	0	0	0.0%	0
77.5		3	25	25	25	25	25	0	0	0.0%	0
100		3	25	25	25	25	25	0	0	0.0%	0
Overall		18	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	24	24	24	24	24	0	0	0.0%	0
10		3	24	24	24	24	24	0	0	0.0%	0
32.5		3	24	24	24	24	24	0	0	0.0%	0
55		3	24	24	24	24	24	0	0	0.0%	0
77.5		3	24	24	24	24	24	0	0	0.0%	0
100		3	24	24	24	24	24	0	0	0.0%	0
Overall		18	24	24	24	24	24	0	0	0.00%	0 (0%)

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3
0	N	6.5	6.2	6.2
10		6.6	6.8	6
32.5		6.6	6.5	5.8
55		6.8	6.9	5.7
77.5		6.9	6.9	5.2
100		7.3	7.1	5

pH-Units

Conc-%	Code	1	2	3
0	N	7.8	7.6	7.7
10		7.7	7.8	7.7
32.5		7.5	7.6	7.8
55		7.4	7.6	7.8
77.5		7.4	7.5	7.8
100		7.3	7.5	7.8

Salinity-ppt

Conc-%	Code	1	2	3
0	N	25	25	25
10		25	25	25
32.5		25	25	25
55		25	25	25
77.5		25	25	25
100		25	25	25

Temperature-°C

Conc-%	Code	1	2	3
0	N	24	24	24
10		24	24	24
32.5		24	24	24
55		24	24	24
77.5		24	24	24
100		24	24	24

aquatic bioassay & consulting laboratories, inc

September 17, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms EPA/600/R-95-136, 1995.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-5135 Pismo Beach)
DATE RECEIVED:	14 Aug - 18
ABC LAB. NO.:	ACB0818.205

CHRONIC TOPSMELT SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC	=	77.50 %
	TUc	=	1.29
	EC25	=	75.62 %
	EC50	=	86.00 %
GROWTH	NOEC	=	77.50 %
	TUc	=	1.29
	IC25	=	78.87 %
	IC50	=	87.14 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	03-9733-2569	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:30	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	21 Aug-18 16:25	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-1203-4706	**Code:**	ACB0818.205tops	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
13-9620-1262	7d Survival Rate	Steel Many-One Rank Sum Test	77.5	100	88.03	1.29	22.1%	✓
16-8453-4960	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	77.5	100	88.03	1.29	30.2%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
15-7624-5258	7d Survival Rate	Linear Interpolation (ICPIN)	EC5	57.12	35.8	68	1.751	✓
			EC10	61.75	49.09	82	1.619	✓
			EC15	66.38	56.7	85.24	1.507	✓
			EC20	71	59.66	85.5	1.408	✓
			EC25	75.62	62.62	85.61	1.322	✓
			EC40	82.3	72.03	89.5	1.215	✓
			EC50	86	77.85	94.1	1.163	✓
18-1250-7486	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC5	59.2	36.87	88.34	1.689	
			IC10	64.97	51.51	87.4	1.539	
			IC15	70.73	55.89	86.59	1.414	
			IC20	76.5	57.74	86.04	1.307	
			IC25	78.87	61.25	87.06	1.268	
			IC40	83.83	72.19	91.49	1.193	
			IC50	87.14	77.27	94.87	1.148	

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
13-9620-1262	7d Survival Rate	Control Resp	0.96	0.8	>>	Yes	Passes Criteria
15-7624-5258	7d Survival Rate	Control Resp	0.96	0.8	>>	Yes	Passes Criteria
16-8453-4960	Mean Dry Biomass-mg	Control Resp	1.242	0.85	>>	Yes	Passes Criteria
18-1250-7486	Mean Dry Biomass-mg	Control Resp	1.242	0.85	>>	Yes	Passes Criteria
13-9620-1262	7d Survival Rate	PMSD	0.2215	<<	0.25	No	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9600	0.8489	1.0000	0.8000	1.0000	0.0400	0.0894	9.32%	0.00%
10		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-4.17%
32.5		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-4.17%
55		5	0.9600	0.8489	1.0000	0.8000	1.0000	0.0400	0.0894	9.32%	0.00%
77.5		5	0.7200	0.4369	1.0000	0.4000	1.0000	0.1020	0.2280	31.67%	25.00%
100		5	0.1200	0.0000	0.4532	0.0000	0.6000	0.1200	0.2683	223.61%	87.50%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.242	0.9793	1.506	0.902	1.472	0.09478	0.2119	17.06%	0.00%
10		5	1.332	1.039	1.624	0.924	1.536	0.1054	0.2356	17.69%	-7.18%
32.5		5	1.502	1.314	1.691	1.374	1.762	0.06777	0.1515	10.09%	-20.93%
55		5	1.34	1.248	1.433	1.268	1.448	0.03329	0.07444	5.55%	-7.89%
77.5		5	1.075	0.6175	1.533	0.5	1.478	0.1648	0.3686	34.28%	13.46%
100		5	0.1512	-0.2686	0.571	0	0.756	0.1512	0.3381	223.61%	87.83%

Analyst: _____ QA: _____

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.8000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000
32.5		1.0000	1.0000	1.0000	1.0000	1.0000
55		1.0000	1.0000	1.0000	0.8000	1.0000
77.5		0.6000	0.4000	1.0000	0.8000	0.8000
100		0.0000	0.0000	0.0000	0.0000	0.6000

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.902	1.472	1.34	1.276	1.222
10		0.924	1.398	1.414	1.386	1.536
32.5		1.48	1.762	1.374	1.476	1.42
55		1.288	1.384	1.314	1.268	1.448
77.5		1.026	0.5	1.478	1.078	1.294
100		0	0	0	0	0.756

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	4/5	5/5	5/5
10		5/5	5/5	5/5	5/5	5/5
32.5		5/5	5/5	5/5	5/5	5/5
55		5/5	5/5	5/5	4/5	5/5
77.5		3/5	2/5	5/5	4/5	4/5
100		0/5	0/5	0/5	0/5	3/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	13-9620-1262	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	03-9733-2569	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:30	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	21 Aug-18 16:25	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-1203-4706	**Code:**	ACB0818.205tops	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	77.5	100	88.03	1.29	22.15%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	30	16	1	8	Asymp	0.9446	Non-Significant Effect
		32.5	30	16	1	8	Asymp	0.9446	Non-Significant Effect
		55	27.5	16	2	8	Asymp	0.8333	Non-Significant Effect
		77.5	19	16	2	8	Asymp	0.1314	Non-Significant Effect
		100*	15	16	0	8	Asymp	0.0191	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.96	0.8	>>	Yes	Passes Criteria
PMSD	0.2215	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.7712	0.75424	5	26.2	<1.0E-37	Significant Effect
Error	0.690971	0.0287905	24			
Total	4.46217		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	4.474	3.895	0.0051	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1.162	4.248	0.3655	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	2.217	3.878	<1.0E-37	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	2.96	2.576	0.0031	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	2.567	2.576	0.0103	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	15.35	9.21	4.6E-04	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.2455	0.1853	7.3E-05	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.8308	0.9031	2.5E-04	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9600	0.8489	1.0000	1.0000	0.8000	1.0000	0.0400	9.32%	0.00%
10		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-4.17%
32.5		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-4.17%
55		5	0.9600	0.8489	1.0000	1.0000	0.8000	1.0000	0.0400	9.32%	0.00%
77.5		5	0.7200	0.4369	1.0000	0.8000	0.4000	1.0000	0.1020	31.67%	25.00%
100		5	0.1200	0.0000	0.4532	0.0000	0.0000	0.6000	0.1200	223.61%	87.50%

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	13-9620-1262	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.298	1.165	1.43	1.345	1.107	1.345	0.04763	8.21%	0.00%
10		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	-3.67%
32.5		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	-3.67%
55		5	1.298	1.165	1.43	1.345	1.107	1.345	0.04763	8.21%	0.00%
77.5		5	1.026	0.7149	1.337	1.107	0.6847	1.345	0.1121	24.42%	20.93%
100		5	0.3576	-0.009178	0.7244	0.2255	0.2255	0.8861	0.1321	82.60%	72.44%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.8000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000
32.5		1.0000	1.0000	1.0000	1.0000	1.0000
55		1.0000	1.0000	1.0000	0.8000	1.0000
77.5		0.6000	0.4000	1.0000	0.8000	0.8000
100		0.0000	0.0000	0.0000	0.0000	0.6000

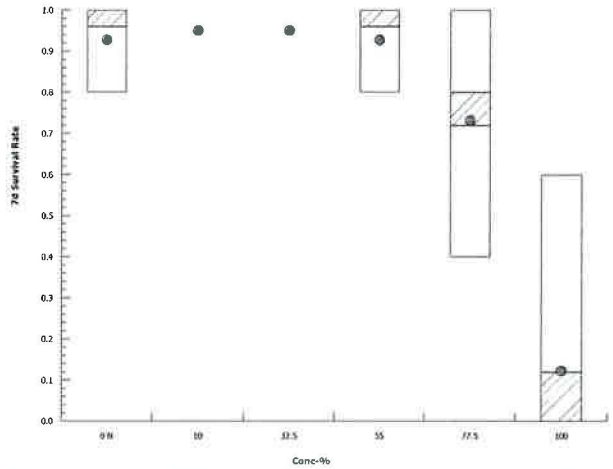
Angular (Corrected) Transformed Detail

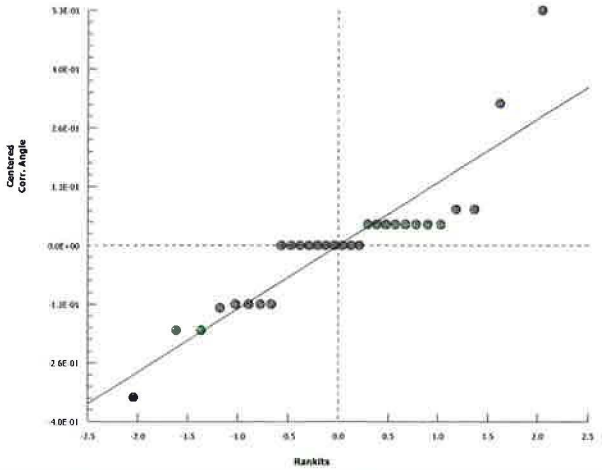
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.345	1.345	1.107	1.345	1.345
10		1.345	1.345	1.345	1.345	1.345
32.5		1.345	1.345	1.345	1.345	1.345
55		1.345	1.345	1.345	1.107	1.345
77.5		0.8861	0.6847	1.345	1.107	1.107
100		0.2255	0.2255	0.2255	0.2255	0.8861

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	4/5	5/5	5/5
10		5/5	5/5	5/5	5/5	5/5
32.5		5/5	5/5	5/5	5/5	5/5
55		5/5	5/5	5/5	4/5	5/5
77.5		3/5	2/5	5/5	4/5	4/5
100		0/5	0/5	0/5	0/5	3/5

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-8453-4960	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	03-9733-2569	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:30	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	21 Aug-18 16:25	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-1203-4706	**Code:**	ACB0818.205tops	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	77.5	100	88.03	1.29	30.22%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	10	-0.5611	2.362	0.376	8	CDF	0.9481	Non-Significant Effect
	32.5	-1.635	2.362	0.376	8	CDF	0.9976	Non-Significant Effect
	55	-0.6164	2.362	0.376	8	CDF	0.9545	Non-Significant Effect
	77.5	1.052	2.362	0.376	8	CDF	0.3971	Non-Significant Effect
	100*	6.864	2.362	0.376	8	CDF	1.8E-06	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.242	0.85	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.9708	1.19416	5	18.9	1.3E-07	Significant Effect
Error	1.5164	0.0631833	24			
Total	7.4872		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	9.326	15.09	0.0968	Equal Variances
Variances	Levene Equality of Variance Test	1.118	3.895	0.3772	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.5806	4.248	0.7145	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6413	3.878	0.0949	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.738	2.576	0.0822	Normal Distribution
Distribution	D'Agostino Skewness Test	0.1829	2.576	0.8549	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	3.054	9.21	0.2172	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1542	0.1853	0.0665	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9586	0.9031	0.2846	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.242	0.9793	1.506	1.276	0.902	1.472	0.09478	17.06%	0.00%
10		5	1.332	1.039	1.624	1.398	0.924	1.536	0.1054	17.69%	-7.18%
32.5		5	1.502	1.314	1.691	1.476	1.374	1.762	0.06777	10.09%	-20.93%
55		5	1.34	1.248	1.433	1.314	1.268	1.448	0.03329	5.55%	-7.89%
77.5		5	1.075	0.6175	1.533	1.078	0.5	1.478	0.1648	34.28%	13.46%
100		5	0.1512	-0.2686	0.571	0	0	0.756	0.1512	223.61%	87.83%

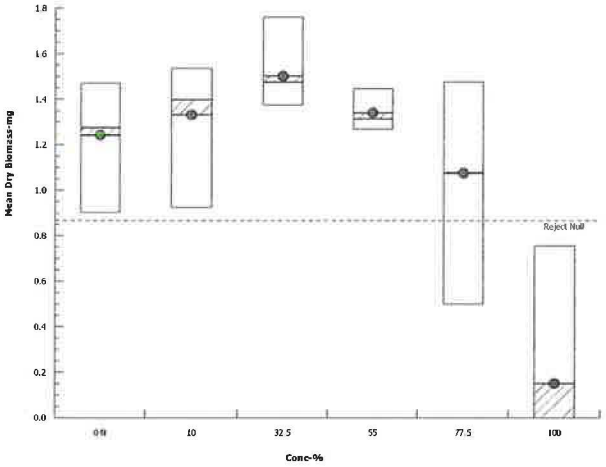
Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

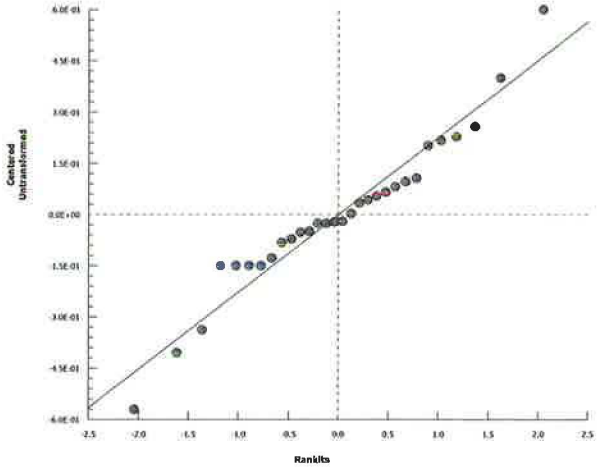
Analysis ID:	16-8453-4960	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.902	1.472	1.34	1.276	1.222
10		0.924	1.398	1.414	1.386	1.536
32.5		1.48	1.762	1.374	1.476	1.42
55		1.288	1.384	1.314	1.268	1.448
77.5		1.026	0.5	1.478	1.078	1.294
100		0	0	0	0	0.756

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	15-7624-5258	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	03-9733-2569	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:30	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	21 Aug-18 16:25	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-1203-4706	**Code:**	ACB0818.205tops	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.96	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	57.12	35.8	68	1.751	1.471	2.794
EC10	61.75	49.09	82	1.619	1.22	2.037
EC15	66.38	56.7	85.24	1.507	1.173	1.764
EC20	71	59.66	85.5	1.408	1.17	1.676
EC25	75.62	62.62	85.61	1.322	1.168	1.597
EC40	82.3	72.03	89.5	1.215	1.117	1.388
EC50	86	77.85	94.1	1.163	1.063	1.284

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	5	0.9600	0.8000	1.0000	0.0400	0.0894	9.32%	0.0%	24	25
10		5	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-4.17%	25	25
32.5		5	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-4.17%	25	25
55		5	0.9600	0.8000	1.0000	0.0400	0.0894	9.32%	0.0%	24	25
77.5		5	0.7200	0.4000	1.0000	0.1020	0.2280	31.67%	25.0%	18	25
100		5	0.1200	0.0000	0.6000	0.1200	0.2683	223.60%	87.5%	3	25

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.8000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000
32.5		1.0000	1.0000	1.0000	1.0000	1.0000
55		1.0000	1.0000	1.0000	0.8000	1.0000
77.5		0.6000	0.4000	1.0000	0.8000	0.8000
100		0.0000	0.0000	0.0000	0.0000	0.6000

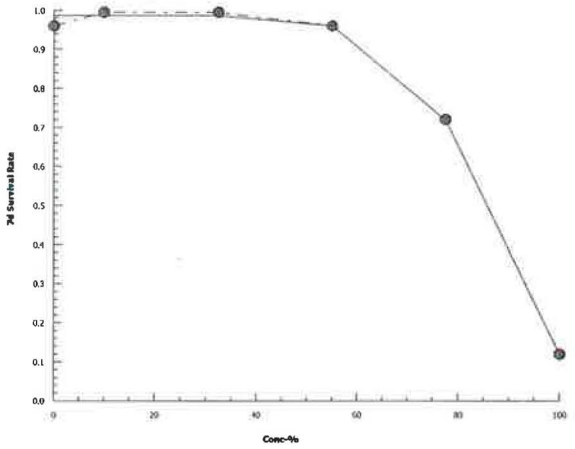
7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	4/5	5/5	5/5
10		5/5	5/5	5/5	5/5	5/5
32.5		5/5	5/5	5/5	5/5	5/5
55		5/5	5/5	5/5	4/5	5/5
77.5		3/5	2/5	5/5	4/5	4/5
100		0/5	0/5	0/5	0/5	3/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	15-7624-5258	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Analyst:_____ QA:_____

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	18-1250-7486	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	03-9733-2569	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:30	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	21 Aug-18 16:25	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-1203-4706	**Code:**	ACB0818.205tops	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	736763	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.242	0.85	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	59.2	36.87	88.34	1.689	1.132	2.712
IC10	64.97	51.51	87.4	1.539	1.144	1.941
IC15	70.73	55.89	86.59	1.414	1.155	1.789
IC20	76.5	57.74	86.04	1.307	1.162	1.732
IC25	78.87	61.25	87.06	1.268	1.149	1.633
IC40	83.83	72.19	91.49	1.193	1.093	1.385
IC50	87.14	77.27	94.87	1.148	1.054	1.294

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	5	1.242	0.902	1.472	0.09478	0.2119	17.06%	0.0%
10		5	1.332	0.924	1.536	0.1054	0.2356	17.69%	-7.18%
32.5		5	1.502	1.374	1.762	0.06777	0.1515	10.09%	-20.93%
55		5	1.34	1.268	1.448	0.03329	0.07444	5.55%	-7.89%
77.5		5	1.075	0.5	1.478	0.1648	0.3686	34.28%	13.46%
100		5	0.1512	0	0.756	0.1512	0.3381	223.60%	87.83%

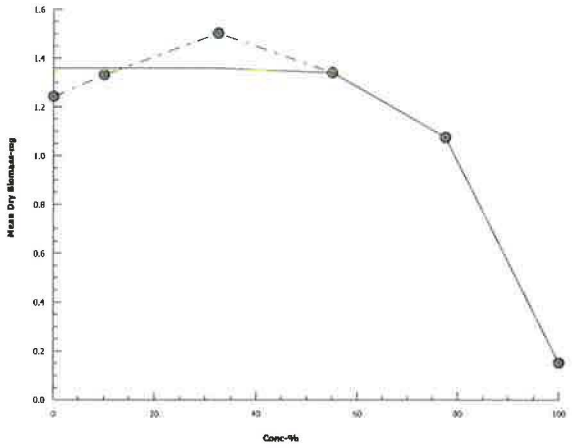
Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.902	1.472	1.34	1.276	1.222
10		0.924	1.398	1.414	1.386	1.536
32.5		1.48	1.762	1.374	1.476	1.42
55		1.288	1.384	1.314	1.268	1.448
77.5		1.026	0.5	1.478	1.078	1.294
100		0	0	0	0	0.756

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	18-1250-7486	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	11 Sep-18 17:32	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	03-9733-2569	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:30	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	21 Aug-18 16:25	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	15-1203-4706	**Code:**	ACB0818.205tops	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	31h (11.2 °C)	**Station:**	R/O Brine		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	6.387	6.093	6.682	5.7	6.8	0.1246	0.3523	5.52%	0
10		8	6.463	6.191	6.734	5.8	6.8	0.1149	0.3249	5.03%	0
32.5		8	6.45	6.119	6.781	5.7	7.1	0.1402	0.3964	6.15%	0
55		8	6.6	6.167	7.033	5.7	7.4	0.1832	0.5182	7.85%	0
77.5		8	6.6	6.178	7.022	5.7	7.3	0.1783	0.5043	7.64%	0
100		8	6.787	6.22	7.355	5.7	7.8	0.2401	0.6792	10.01%	0
Overall		48	6.548	6.411	6.685	5.7	7.8	0.06803	0.4713	7.20%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.675	7.601	7.749	7.6	7.8	0.03134	0.08864	1.16%	0
10		8	7.712	7.659	7.766	7.6	7.8	0.02266	0.06409	0.83%	0
32.5		8	7.625	7.528	7.722	7.5	7.8	0.04119	0.1165	1.53%	0
55		8	7.575	7.443	7.707	7.4	7.8	0.0559	0.1581	2.09%	0
77.5		8	7.538	7.412	7.663	7.4	7.8	0.05324	0.1506	2.0%	0
100		8	7.5	7.316	7.684	7.3	7.9	0.07792	0.2204	2.94%	0
Overall		48	7.604	7.559	7.649	7.3	7.9	0.02227	0.1543	2.03%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	25	25	25	25	25	0	0	0.0%	0
10		8	25	25	25	25	25	0	0	0.0%	0
32.5		8	25	25	25	25	25	0	0	0.0%	0
55		8	25	25	25	25	25	0	0	0.0%	0
77.5		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
Overall		48	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	21	21	21	21	21	0	0	0.0%	0
10		8	21	21	21	21	21	0	0	0.0%	0
32.5		8	21	21	21	21	21	0	0	0.0%	0
55		8	21	21	21	21	21	0	0	0.0%	0
77.5		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
Overall		48	21	21	21	21	21	0	0	0.00%	0 (0%)

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3	4	5	6	7	8
0	N	6.5	6.6	6.2	6.7	6.8	6.2	6.4	5.7
10		6.6	6.5	6.8	6.7	6.7	6.3	6.3	5.8
32.5		6.6	6.6	6.5	7.1	6.5	6.4	6.2	5.7
55		6.8	6.9	6.9	7.4	6.5	6.4	6.2	5.7
77.5		6.9	6.8	6.9	7.3	6.6	6.5	6.1	5.7
100		7.3	7.1	7.1	7.8	6.7	6.5	6.1	5.7

pH-Units

Conc-%	Code	1	2	3	4	5	6	7	8
0	N	7.8	7.7	7.6	7.6	7.7	7.6	7.6	7.8
10		7.7	7.6	7.8	7.7	7.7	7.7	7.7	7.8
32.5		7.5	7.5	7.6	7.5	7.7	7.7	7.7	7.8
55		7.4	7.4	7.6	7.4	7.6	7.7	7.7	7.8
77.5		7.4	7.4	7.5	7.4	7.5	7.6	7.7	7.8
100		7.3	7.3	7.5	7.3	7.4	7.6	7.7	7.9

Salinity-ppt

Conc-%	Code	1	2	3	4	5	6	7	8
0	N	25	25	25	25	25	25	25	25
10		25	25	25	25	25	25	25	25
32.5		25	25	25	25	25	25	25	25
55		25	25	25	25	25	25	25	25
77.5		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25

Temperature-°C

Conc-%	Code	1	2	3	4	5	6	7	8
0	N	21	21	21	21	21	21	21	21
10		21	21	21	21	21	21	21	21
32.5		21	21	21	21	21	21	21	21
55		21	21	21	21	21	21	21	21
77.5		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21

Analyst: QA:

aquatic bioassay & consulting laboratories, inc

September 17, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-5135 Pismo Beach)
DATE RECEIVED:	14 Aug - 18
ABC LAB. NO.:	ACB0818.205

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Test Code: ACB0818.205urc | 06-8159-4660

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	06-2814-1232	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:42	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	04-9121-9947	**Code:**	ACB0818.205u	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	27h (11.2 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
10-4791-2621	Fertilization Rate	Dunnett Multiple Comparison Test	100	> 100	n/a	1	3.95%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
01-4574-5944	Fertilization Rate	Linear Interpolation (ICPIN)	EC5	>100	n/a	n/a	<1
			EC10	>100	n/a	n/a	<1
			EC15	>100	n/a	n/a	<1
			EC20	>100	n/a	n/a	<1
			EC25	>100	n/a	n/a	<1
			EC40	>100	n/a	n/a	<1
			EC50	>100	n/a	n/a	<1

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
01-4574-5944	Fertilization Rate	Control Resp	0.9525	0.7	>>	Yes	Passes Criteria
10-4791-2621	Fertilization Rate	Control Resp	0.9525	0.7	>>	Yes	Passes Criteria

Fertilization Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9525	0.9172	0.9878	0.9300	0.9800	0.0111	0.0222	2.33%	0.00%
10		4	0.9675	0.9403	0.9947	0.9500	0.9900	0.0085	0.0171	1.77%	-1.57%
32.5		4	0.9525	0.9107	0.9943	0.9300	0.9800	0.0132	0.0263	2.76%	0.00%
55		4	0.9525	0.9253	0.9797	0.9300	0.9700	0.0085	0.0171	1.79%	0.00%
77.5		4	0.9650	0.9445	0.9855	0.9500	0.9800	0.0065	0.0129	1.34%	-1.31%
100		4	0.9575	0.9423	0.9727	0.9500	0.9700	0.0048	0.0096	1.00%	-0.52%

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9400	0.9300	0.9600	0.9800
10		0.9900	0.9600	0.9500	0.9700
32.5		0.9300	0.9700	0.9300	0.9800
55		0.9600	0.9700	0.9500	0.9300
77.5		0.9800	0.9500	0.9700	0.9600
100		0.9600	0.9700	0.9500	0.9500

Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	94/100	93/100	96/100	98/100
10		99/100	96/100	95/100	97/100
32.5		93/100	97/100	93/100	98/100
55		96/100	97/100	95/100	93/100
77.5		98/100	95/100	97/100	96/100
100		96/100	97/100	95/100	95/100

Analyst: QA:

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	10-4791-2621	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:29	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	06-2814-1232	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:42	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	04-9121-9947	**Code:**	ACB0818.205u	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	27h (11.2 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	3.95%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	-1.163	2.407	0.081	6	CDF	0.9890	Non-Significant Effect
		32.5	-0.05157	2.407	0.081	6	CDF	0.8481	Non-Significant Effect
		55	0.07561	2.407	0.081	6	CDF	0.8101	Non-Significant Effect
		77.5	-0.8545	2.407	0.081	6	CDF	0.9746	Non-Significant Effect
		100	-0.2366	2.407	0.081	6	CDF	0.8935	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9525	0.7	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0060341	0.0012068	5	0.5272	0.7528	Non-Significant Effect
Error	0.0412026	0.0022890	18			
Total	0.0472367		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	2.953	15.09	0.7072	Equal Variances
Variances	Levene Equality of Variance Test	1.468	4.248	0.2489	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.233	4.248	0.3346	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4821	3.878	0.2350	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.396	2.576	0.1628	Normal Distribution
Distribution	D'Agostino Skewness Test	0.7791	2.576	0.4359	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	2.555	9.21	0.2788	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1025	0.2056	0.7887	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9317	0.884	0.1065	Normal Distribution

Fertilization Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9525	0.9172	0.9878	0.9500	0.9300	0.9800	0.0111	2.33%	0.00%
10		4	0.9675	0.9403	0.9947	0.9650	0.9500	0.9900	0.0085	1.77%	-1.57%
32.5		4	0.9525	0.9107	0.9943	0.9500	0.9300	0.9800	0.0132	2.76%	0.00%
55		4	0.9525	0.9253	0.9797	0.9550	0.9300	0.9700	0.0085	1.79%	0.00%
77.5		4	0.9650	0.9445	0.9855	0.9650	0.9500	0.9800	0.0065	1.34%	-1.31%
100		4	0.9575	0.9423	0.9727	0.9550	0.9500	0.9700	0.0048	1.00%	-0.52%

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	10-4791-2621	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:29	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.356	1.267	1.445	1.346	1.303	1.429	0.02794	4.12%	0.00%
10		4	1.396	1.309	1.482	1.383	1.345	1.471	0.02715	3.89%	-2.90%
32.5		4	1.358	1.255	1.461	1.35	1.303	1.429	0.03236	4.77%	-0.13%
55		4	1.354	1.29	1.417	1.357	1.303	1.397	0.01987	2.94%	0.19%
77.5		4	1.385	1.328	1.442	1.383	1.345	1.429	0.01799	2.60%	-2.13%
100		4	1.364	1.325	1.403	1.357	1.345	1.397	0.01225	1.80%	-0.59%

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9400	0.9300	0.9600	0.9800
10		0.9900	0.9600	0.9500	0.9700
32.5		0.9300	0.9700	0.9300	0.9800
55		0.9600	0.9700	0.9500	0.9300
77.5		0.9800	0.9500	0.9700	0.9600
100		0.9600	0.9700	0.9500	0.9500

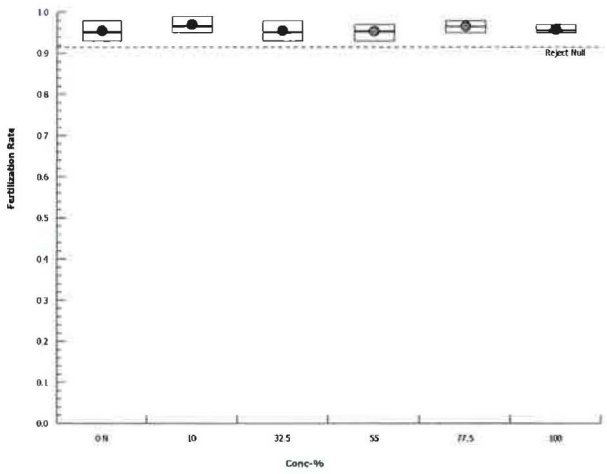
Angular (Corrected) Transformed Detail

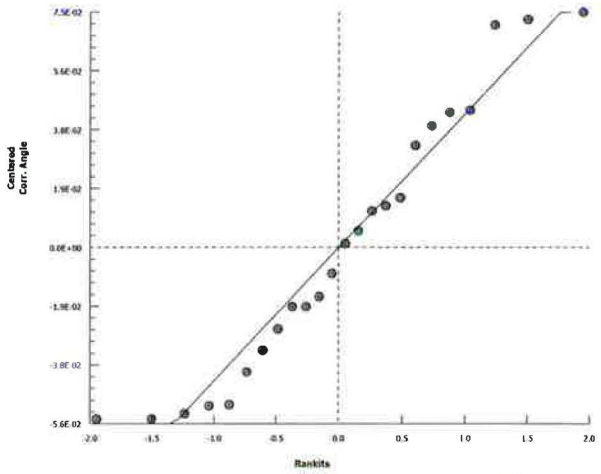
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.323	1.303	1.369	1.429
10		1.471	1.369	1.345	1.397
32.5		1.303	1.397	1.303	1.429
55		1.369	1.397	1.345	1.303
77.5		1.429	1.345	1.397	1.369
100		1.369	1.397	1.345	1.345

Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	94/100	93/100	96/100	98/100
10		99/100	96/100	95/100	97/100
32.5		93/100	97/100	93/100	98/100
55		96/100	97/100	95/100	93/100
77.5		98/100	95/100	97/100	96/100
100		96/100	97/100	95/100	95/100

Graphics





CETIS Analytical Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-4574-5944	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:29	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	06-2814-1232	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:42	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	04-9121-9947	**Code:**	ACB0818.205u	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	27h (11.2 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9525	0.7	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	n/a	n/a	<1	n/a	n/a
EC10	>100	n/a	n/a	<1	n/a	n/a
EC15	>100	n/a	n/a	<1	n/a	n/a
EC20	>100	n/a	n/a	<1	n/a	n/a
EC25	>100	n/a	n/a	<1	n/a	n/a
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Fertilization Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9525	0.9300	0.9800	0.0111	0.0222	2.33%	0.0%	381	400
10		4	0.9675	0.9500	0.9900	0.0085	0.0171	1.77%	-1.58%	387	400
32.5		4	0.9525	0.9300	0.9800	0.0132	0.0263	2.76%	0.0%	381	400
55		4	0.9525	0.9300	0.9700	0.0085	0.0171	1.79%	0.0%	381	400
77.5		4	0.9650	0.9500	0.9800	0.0065	0.0129	1.34%	-1.31%	386	400
100		4	0.9575	0.9500	0.9700	0.0048	0.0096	1.00%	-0.52%	383	400

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9400	0.9300	0.9600	0.9800
10		0.9900	0.9600	0.9500	0.9700
32.5		0.9300	0.9700	0.9300	0.9800
55		0.9600	0.9700	0.9500	0.9300
77.5		0.9800	0.9500	0.9700	0.9600
100		0.9600	0.9700	0.9500	0.9500

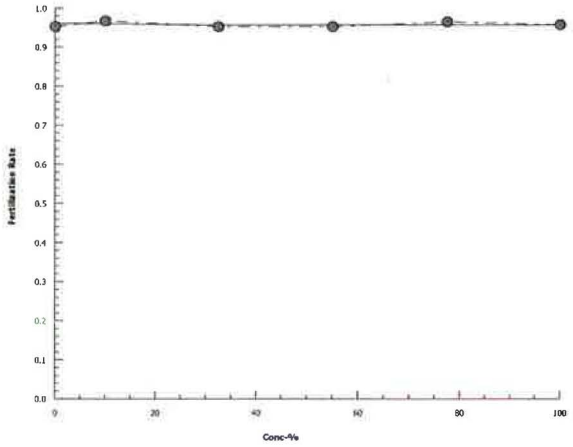
Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	94/100	93/100	96/100	98/100
10		99/100	96/100	95/100	97/100
32.5		93/100	97/100	93/100	98/100
55		96/100	97/100	95/100	93/100
77.5		98/100	95/100	97/100	96/100
100		96/100	97/100	95/100	95/100

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-4574-5944	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:29	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Measurement Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	06-2814-1232	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:42	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	04-9121-9947	**Code:**	ACB0818.205u	**Client:**	Abalone Coast Analytical
Sample Date:	13 Aug-18 10:00	**Material:**	Sample Water	**Project:**	18-5135 Pismo Beach
Receipt Date:	14 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	27h (11.2 °C)	**Station:**	R/O Brine		

Parameter Acceptability Criteria

Parameter	Min	Max	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
Salinity	34	34	32	36	Yes	Passes Criteria
Temperature	14.7	14.8	11	13	Yes	Above Criteria

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.45	2.003	10.9	6.1	6.8	0.35	0.495	7.67%	0
10		2	6.35	4.444	8.256	6.2	6.5	0.15	0.2121	3.34%	0
32.5		2	6.45	3.273	9.627	6.2	6.7	0.25	0.3536	5.48%	0
55		2	6.5	1.418	11.58	6.1	6.9	0.4	0.5657	8.7%	0
77.5		2	6.55	3.373	9.727	6.3	6.8	0.25	0.3536	5.4%	0
100		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
Overall		12	6.442	6.245	6.638	6.1	6.9	0.08915	0.3088	4.79%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
10		2	7.95	7.315	8.585	7.9	8	0.04999	0.0707	0.89%	0
32.5		2	7.95	7.315	8.585	7.9	8	0.04999	0.0707	0.89%	0
55		2	8.05	7.415	8.685	8	8.1	0.05001	0.07073	0.88%	0
77.5		2	8.05	7.415	8.685	8	8.1	0.05001	0.07073	0.88%	0
100		2	8.1	8.082	8.118	8.1	8.1	0	0	0.0%	0
Overall		12	8	7.946	8.054	7.9	8.1	0.02462	0.08528	1.07%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.0%	0
10		2	34	34	34	34	34	0	0	0.0%	0
32.5		2	34	34	34	34	34	0	0	0.0%	0
55		2	34	34	34	34	34	0	0	0.0%	0
77.5		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
10		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
32.5		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
55		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
77.5		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
100		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
Overall		12	14.75	14.72	14.78	14.7	14.8	0.01508	0.05222	0.35%	0 (0%)

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	6.8	6.1
10		6.2	6.5
32.5		6.7	6.2
55		6.9	6.1
77.5		6.8	6.3
100		6.6	6.1

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
10		8	7.9
32.5		8	7.9
55		8.1	8
77.5		8.1	8
100		8.1	8.1

Salinity-ppt

Conc-%	Code	1	2
0	N	34	34
10		34	34
32.5		34	34
55		34	34
77.5		34	34
100		34	34

Temperature-°C

Conc-%	Code	1	2
0	N	14.8	14.7
10		14.8	14.7
32.5		14.8	14.7
55		14.8	14.7
77.5		14.8	14.7
100		14.8	14.7

ABC

Chain- Of -Custody
Subcontract

DUE 24-Hou 48 - Hour Normal

Client Name:	Address	City	State	Zip
Abalone Coast Analytical	**141 Suburban Rd, STE C-1**	**San Luis Obispo**	**CA**	**93401**
Bill To:	**same as above**			

PROJECT
18-5735 Pismo Beach

Phone # 805-595-1080
Email: info@abalonecoastanalytical.com
Cell # 805-235-2330

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
R/O Brine	8/13/18 1000	Acute TOX: Silversides	AQ	7	plup	-1
		Chronic TOX: Sea Urchin & topsmelt				
					Temp. deg. C = 11.4	
					Chlorine (mg/L) = 0.1 ADDED 0.1ML NA THIO.	
					NH3 (mg/L) =	

Relinquished By:	Received By:	Received By:
Date/Time 8/13/18 1800	Date/Time 8-14-18 1130	Date/Time

filepath: c:/business doc/forms/subcontract form

State forms needed - Y / N

Sampler name: _____
Sampler employeed by: _____

USER ID _____
System number _____
System name _____

Remarks:

aquatic bioassay & consulting laboratories, inc

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

DATE: 14 August - 2018

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 100.00 ug/l

EC25 = 109.20 ug/l
EC50 = 134.90 ug/l

ENDPOINT: GROWTH

NOEC = 100.00 ug/l

IC25 = 121.10 ug/l
IC50 = 142.20 ug/l

Yours very truly,

Scott Johnson
Laboratory Director

*25ppt

29 north olive st. ventura, ca 93001 (805) 643 5621 aquabio.org

CETIS Summary Report

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	18-3713-7880	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:20	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	21 Aug-18 16:15	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	16-3521-0979	**Code:**	TOPS081418-25pp	**Client:**	Internal Lab
Sample Date:	14 Aug-18 16:20	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
13-6157-5167	7d Survival Rate	Steel Many-One Rank Sum Test	100	180	134.2		18.4%	✓
11-6454-1418	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	100	180	134.2		27.8%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
01-4242-9469	7d Survival Rate	Linear Interpolation (ICPIN)	EC5	69.75	58.29	121.6		✓
			EC10	83.5	60.58	121.3		✓
			EC15	97.25	62.88	120.9		✓
			EC20	104.1	68.62	124		✓
			EC25	109.2	75.22	128		✓
			EC40	124.6	95.43	139.9		✓
			EC50	134.9	109.7	148.3		✓
01-1518-6400	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC5	104.2	48.26	104.5		
			IC10	108.4	62.52	109		
			IC15	112.7	76.78	113.5		
			IC20	116.9	91.04	118		
			IC25	121.1	97.7	122.6		
			IC40	133.8	116.9	136.1		
			IC50	142.2	128.3	145.1		

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
01-4242-9469	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
13-6157-5167	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
01-1518-6400	Mean Dry Biomass-mg	Control Resp	1.182	0.85	>>	Yes	Passes Criteria
11-6454-1418	Mean Dry Biomass-mg	Control Resp	1.182	0.85	>>	Yes	Passes Criteria
13-6157-5167	7d Survival Rate	PMSD	0.1837	<<	0.25	No	Passes Criteria

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
56		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		5	0.8400	0.5162	1.0000	0.4000	1.0000	0.1166	0.2608	31.04%	16.00%
180		5	0.0400	0.0000	0.1511	0.0000	0.2000	0.0400	0.0894	223.61%	96.00%
320		5	0.0800	0.0000	0.2160	0.0000	0.2000	0.0490	0.1095	136.93%	92.00%
560		5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.182	0.9868	1.378	0.906	1.3	0.07046	0.1576	13.32%	0.00%
56		5	1.618	1.412	1.824	1.452	1.806	0.0742	0.1659	10.25%	-36.84%
100		5	1.488	0.9753	2.002	0.83	1.876	0.1848	0.4133	27.77%	-25.88%
180		5	0.0428	-0.07603	0.1616	0	0.214	0.0428	0.0957	223.61%	96.38%
320		5	0.1084	-0.07817	0.295	0	0.304	0.0672	0.1503	138.61%	90.83%
560		5	0	0	0	0	0	0	0		100.00%

Analyst: KM QA: Pass

Pacific Topsmelt 7-d Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	1.0000	1.0000
100		0.8000	1.0000	1.0000	0.4000	1.0000
180		0.0000	0.0000	0.2000	0.0000	0.0000
320		0.0000	0.2000	0.0000	0.0000	0.2000
560		0.0000	0.0000	0.0000	0.0000	0.0000

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.906	1.256	1.3	1.222	1.228
56		1.464	1.806	1.598	1.77	1.452
100		1.372	1.756	1.608	0.83	1.876
180		0	0	0.214	0	0
320		0	0.238	0	0	0.304
560		0	0	0	0	0

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
56		5/5	5/5	5/5	5/5	5/5
100		4/5	5/5	5/5	2/5	5/5
180		0/5	0/5	1/5	0/5	0/5
320		0/5	1/5	0/5	0/5	1/5
560		0/5	0/5	0/5	0/5	0/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	13-6157-5167	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:36	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-3713-7880	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:20	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	21 Aug-18 16:15	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	16-3521-0979	**Code:**	TOPS081418-25pp	**Client:**	Internal Lab
Sample Date:	14 Aug-18 16:20	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	180	134.2		18.37%

Steel Many-One Rank Sum Test

Control vs	Conc-µg/L	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	56	27.5	17	1	8	Asymp	0.8000	Non-Significant Effect
	100	22.5	17	1	8	Asymp	0.3541	Non-Significant Effect
	180*	15	17	0	8	Asymp	0.0158	Significant Effect
	320*	15	17	0	8	Asymp	0.0158	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria
PMSD	0.1837	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.97516	1.49379	4	67.15	<1.0E-37	Significant Effect
Error	0.444937	0.0222468	20			
Total	6.42009		24			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	6.865	4.431	0.0012	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1.371	4.893	0.2907	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.95	3.878	<1.0E-37	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	3.152	2.576	0.0016	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	2.933	2.576	0.0034	Non-Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	18.54	9.21	9.4E-05	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.26	0.2018	1.3E-04	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.7886	0.8877	1.5E-04	Non-Normal Distribution

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
56		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		5	0.8400	0.5162	1.0000	1.0000	0.4000	1.0000	0.1166	31.04%	16.00%
180		5	0.0400	0.0000	0.1511	0.0000	0.0000	0.2000	0.0400	223.61%	96.00%
320		5	0.0800	0.0000	0.2160	0.0000	0.0000	0.2000	0.0490	136.93%	92.00%
560		5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 13-6157-5167 **Endpoint:** 7d Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 12 Sep-18 10:36 **Analysis:** Nonparametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
56		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.00%	0.00%
100		5	1.166	0.8081	1.523	1.345	0.6847	1.345	0.1287	24.70%	13.36%
180		5	0.2731	0.1409	0.4054	0.2255	0.2255	0.4636	0.04763	38.99%	79.70%
320		5	0.3208	0.1588	0.4827	0.2255	0.2255	0.4636	0.05833	40.66%	76.16%
560		5	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.00%	83.24%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	1.0000	1.0000
100		0.8000	1.0000	1.0000	0.4000	1.0000
180		0.0000	0.0000	0.2000	0.0000	0.0000
320		0.0000	0.2000	0.0000	0.0000	0.2000
560		0.0000	0.0000	0.0000	0.0000	0.0000

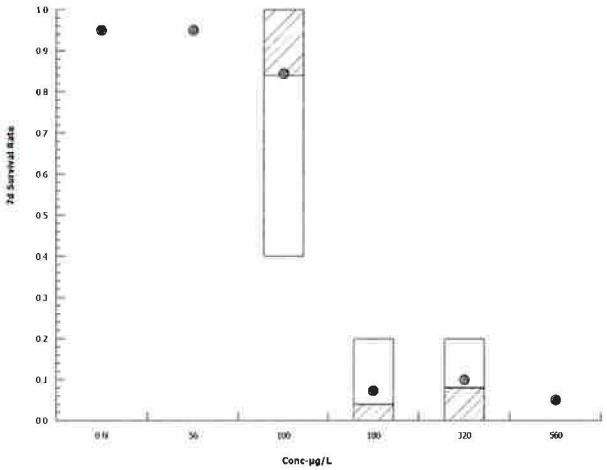
Angular (Corrected) Transformed Detail

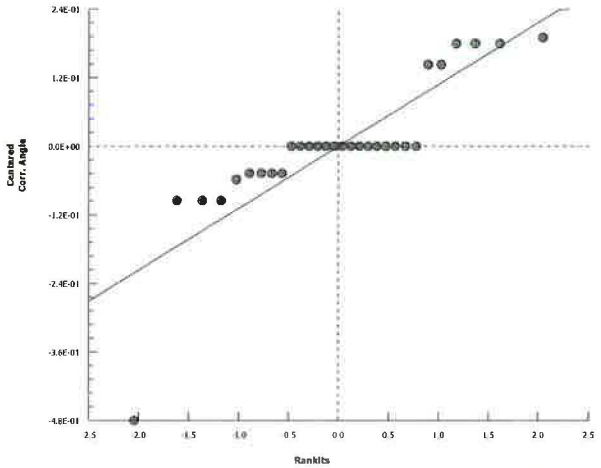
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.345	1.345	1.345	1.345	1.345
56		1.345	1.345	1.345	1.345	1.345
100		1.107	1.345	1.345	0.6847	1.345
180		0.2255	0.2255	0.4636	0.2255	0.2255
320		0.2255	0.4636	0.2255	0.2255	0.4636
560		0.2255	0.2255	0.2255	0.2255	0.2255

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
56		5/5	5/5	5/5	5/5	5/5
100		4/5	5/5	5/5	2/5	5/5
180		0/5	0/5	1/5	0/5	0/5
320		0/5	1/5	0/5	0/5	1/5
560		0/5	0/5	0/5	0/5	0/5

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	11-6454-1418	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:37	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-3713-7880	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:20	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	21 Aug-18 16:15	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	16-3521-0979	**Code:**	TOPS081418-25pp	**Client:**	Internal Lab
Sample Date:	14 Aug-18 16:20	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	180	134.2		27.83%

Dunnett Multiple Comparison Test

Control vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	56	-3.05	2.305	0.329	8	CDF	0.9999	Non-Significant Effect
	100	-2.143	2.305	0.329	8	CDF	0.9991	Non-Significant Effect
	180*	7.981	2.305	0.329	8	CDF	6.8E-07	Significant Effect
	320*	7.521	2.305	0.329	8	CDF	1.0E-06	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.182	0.85	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	11.511	2.87774	4	56.45	<1.0E-37	Significant Effect
Error	1.01954	0.0509771	20			
Total	12.5305		24			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	9.664	13.28	0.0465	Equal Variances
Variances	Levene Equality of Variance Test	3.094	4.431	0.0390	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.916	4.893	0.1601	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5907	3.878	0.1270	Normal Distribution
Distribution	D'Agostino Kurtosis Test	2.433	2.576	0.0150	Normal Distribution
Distribution	D'Agostino Skewness Test	2.293	2.576	0.0218	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	11.18	9.21	0.0037	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1303	0.2018	0.3296	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9219	0.8877	0.0567	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.182	0.9868	1.378	1.228	0.906	1.3	0.07046	13.32%	0.00%
56		5	1.618	1.412	1.824	1.598	1.452	1.806	0.0742	10.25%	-36.84%
100		5	1.488	0.9753	2.002	1.608	0.83	1.876	0.1848	27.77%	-25.88%
180		5	0.0428	-0.07603	0.1616	0	0	0.214	0.0428	223.61%	96.38%
320		5	0.1084	-0.07817	0.295	0	0	0.304	0.0672	138.61%	90.83%
560		5	0	0	0	0	0	0	0		100.00%

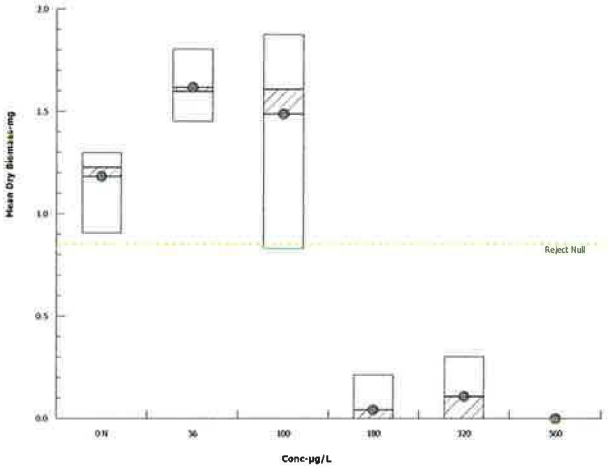
Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

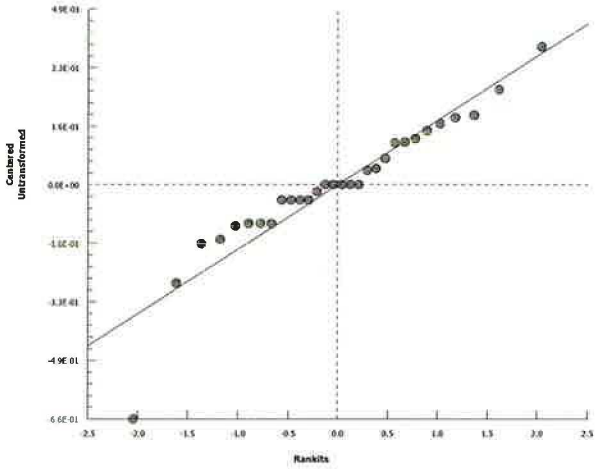
Analysis ID:	11-6454-1418	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:37	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.906	1.256	1.3	1.222	1.228
56		1.464	1.806	1.598	1.77	1.452
100		1.372	1.756	1.608	0.83	1.876
180		0	0	0.214	0	0
320		0	0.238	0	0	0.304
560		0	0	0	0	0

Graphics





CETIS Analytical Report

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-4242-9469	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:37	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-3713-7880	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:20	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	21 Aug-18 16:15	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	16-3521-0979	**Code:**	TOPS081418-25pp	**Client:**	Internal Lab
Sample Date:	14 Aug-18 16:20	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	69.75	58.29	121.6
EC10	83.5	60.58	121.3
EC15	97.25	62.88	120.9
EC20	104.1	68.62	124
EC25	109.2	75.22	128
EC40	124.6	95.43	139.9
EC50	134.9	109.7	148.3

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	5	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	25	25
56		5	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	25	25
100		5	0.8400	0.4000	1.0000	0.1166	0.2608	31.04%	16.0%	21	25
180		5	0.0400	0.0000	0.2000	0.0400	0.0894	223.60%	96.0%	1	25
320		5	0.0800	0.0000	0.2000	0.0490	0.1095	136.90%	92.0%	2	25
560		5	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	25

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	1.0000	1.0000
100		0.8000	1.0000	1.0000	0.4000	1.0000
180		0.0000	0.0000	0.2000	0.0000	0.0000
320		0.0000	0.2000	0.0000	0.0000	0.2000
560		0.0000	0.0000	0.0000	0.0000	0.0000

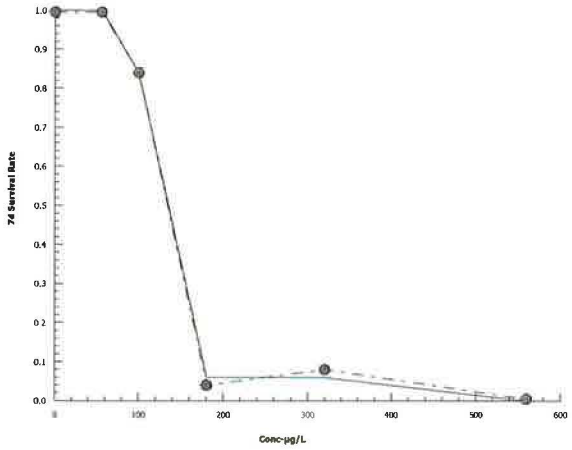
7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
56		5/5	5/5	5/5	5/5	5/5
100		4/5	5/5	5/5	2/5	5/5
180		0/5	0/5	1/5	0/5	0/5
320		0/5	1/5	0/5	0/5	1/5
560		0/5	0/5	0/5	0/5	0/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-4242-9469	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:37	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Analyst:_____ QA:_____

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-1518-6400	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:37	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-3713-7880	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:20	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	21 Aug-18 16:15	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	16-3521-0979	**Code:**	TOPS081418-25pp	**Client:**	Internal Lab
Sample Date:	14 Aug-18 16:20	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	424205	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.182	0.85	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	104.2	48.26	104.5
IC10	108.4	62.52	109
IC15	112.7	76.78	113.5
IC20	116.9	91.04	118
IC25	121.1	97.7	122.6
IC40	133.8	116.9	136.1
IC50	142.2	128.3	145.1

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	5	1.182	0.906	1.3	0.07046	0.1576	13.32%	0.0%
56		5	1.618	1.452	1.806	0.0742	0.1659	10.25%	-36.84%
100		5	1.488	0.83	1.876	0.1848	0.4133	27.77%	-25.88%
180		5	0.0428	0	0.214	0.0428	0.0957	223.60%	96.38%
320		5	0.1084	0	0.304	0.0672	0.1503	138.60%	90.83%
560		5	0	0	0	0	0		100.0%

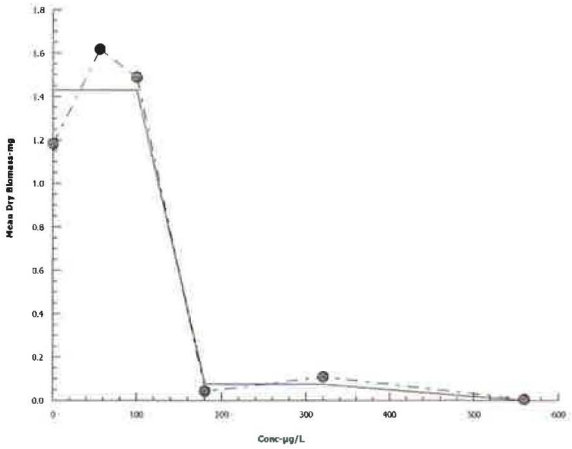
Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.906	1.256	1.3	1.222	1.228
56		1.464	1.806	1.598	1.77	1.452
100		1.372	1.756	1.608	0.83	1.876
180		0	0	0.214	0	0
320		0	0.238	0	0	0.304
560		0	0	0	0	0

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-1518-6400	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	12 Sep-18 10:37	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



CETIS Measurement Report

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	18-3713-7880	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	14 Aug-18 16:20	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	21 Aug-18 16:15	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	7d	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	16-3521-0979	**Code:**	TOPS081418-25pp	**Client:**	Internal Lab
Sample Date:	14 Aug-18 16:20	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	6.387	6.093	6.682	5.7	6.8	0.1246	0.3523	5.52%	0
56		8	6.175	5.893	6.457	5.7	6.7	0.1191	0.337	5.46%	0
100		8	6.175	5.832	6.518	5.5	6.7	0.1449	0.4097	6.64%	0
180		8	6.1	5.718	6.482	5.2	6.6	0.1615	0.4567	7.49%	0
320		8	6.162	5.768	6.557	5.1	6.6	0.1668	0.4719	7.66%	0
560		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
Overall		42	6.207	6.084	6.33	5.1	6.8	0.061	0.3953	6.37%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.65	7.587	7.713	7.6	7.8	0.02673	0.07559	0.99%	0
56		8	7.737	7.661	7.814	7.6	7.9	0.03239	0.09161	1.18%	0
100		8	7.737	7.661	7.814	7.6	7.9	0.03239	0.09161	1.18%	0
180		8	7.737	7.661	7.814	7.6	7.9	0.03239	0.09161	1.18%	0
320		8	7.725	7.651	7.799	7.6	7.9	0.03134	0.08864	1.15%	0
560		2	7.85	7.215	8.485	7.8	7.9	0.05	0.07071	0.9%	0
Overall		42	7.724	7.695	7.753	7.6	7.9	0.01438	0.09321	1.21%	0 (0%)

Salinity-ppt

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	25	25	25	25	25	0	0	0.0%	0
56		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
180		8	25	25	25	25	25	0	0	0.0%	0
320		8	25	25	25	25	25	0	0	0.0%	0
560		2	25	25	25	25	25	0	0	0.0%	0
Overall		42	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	21	21	21	21	21	0	0	0.0%	0
56		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
180		8	21	21	21	21	21	0	0	0.0%	0
320		8	21	21	21	21	21	0	0	0.0%	0
560		2	21	21	21	21	21	0	0	0.0%	0
Overall		42	21	21	21	21	21	0	0	0.00%	0 (0%)

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	6.5	6.6	6.2	6.7	6.8	6.2	6.4	5.7
56		6.5	6	6.2	5.8	6.7	6.2	6.3	5.7
100		6.5	5.9	6.5	5.8	6.7	6.3	6.2	5.5
180		6.5	5.8	6.2	5.9	6.6	6.4	6.2	5.2
320		6.6	6.1	6.4	6.1	6.5	6.4	6.1	5.1
560		6.6	6.1						

pH-Units

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	7.6	7.7	7.6	7.6	7.7	7.6	7.6	7.8
56		7.9	7.7	7.8	7.6	7.7	7.7	7.7	7.8
100		7.8	7.6	7.9	7.7	7.7	7.7	7.7	7.8
180		7.8	7.6	7.9	7.7	7.7	7.7	7.7	7.8
320		7.8	7.6	7.9	7.7	7.7	7.7	7.7	7.7
560		7.8	7.9						

Salinity-ppt

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	25	25	25	25	25	25	25	25
56		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25
180		25	25	25	25	25	25	25	25
320		25	25	25	25	25	25	25	25
560		25	25						

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	21	21	21	21	21	21	21	21
56		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21
180		21	21	21	21	21	21	21	21
320		21	21	21	21	21	21	21	21
560		21	21						

Analyst:_____ QA:_____

aquatic bioassay & consulting laboratories, inc

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

DATE: 8/14/2018

STANDARD TOXICANT: Copper Chloride

NOEC = 18.00 ug/l

EC25 = 35.61 ug/l
EC50 = 46.09 ug/l

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 aquabio.org

CETIS Summary Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	13-2821-4238	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	06-0452-7701	**Code:**	URC081418	**Client:**	Internal Lab
Sample Date:	14 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
15-2683-9591	Fertilization Rate	Dunnett Multiple Comparison Test	18	32	24		6.45%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2931-9379	Fertilization Rate	Linear Interpolation (ICPIN)	EC5	22.27	19.04	22.76		
			EC10	26.55	23.78	27.59		
			EC15	30.82	28.5	32.39		
			EC20	33.52	32.24	34.26		
			EC25	35.61	34.43	36.33		
			EC40	41.9	40.73	42.66		
			EC50	46.09	44.77	46.91		

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
14-2931-9379	Fertilization Rate	Control Resp	0.9375	0.7	>>	Yes	Passes Criteria
15-2683-9591	Fertilization Rate	Control Resp	0.9375	0.7	>>	Yes	Passes Criteria
15-2683-9591	Fertilization Rate	PMSD	0.06452	<<	0.25	No	Passes Criteria

Fertilization Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9375	0.9022	0.9728	0.9100	0.9600	0.0111	0.0222	2.37%	0.00%
18		4	0.9400	0.8989	0.9811	0.9100	0.9700	0.0129	0.0258	2.75%	-0.27%
32		4	0.7850	0.7691	0.8009	0.7700	0.7900	0.0050	0.0100	1.27%	16.27%
56		4	0.2475	0.2077	0.2873	0.2100	0.2600	0.0125	0.0250	10.10%	73.60%
100		4	0.0525	0.0000	0.1241	0.0000	0.0900	0.0225	0.0450	85.71%	94.40%
180		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Fertilization Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9100	0.9300	0.9500	0.9600
18		0.9100	0.9500	0.9300	0.9700
32		0.7700	0.7900	0.7900	0.7900
56		0.2600	0.2100	0.2600	0.2600
100		0.0300	0.0900	0.0900	0.0000
180		0.0000	0.0000	0.0000	0.0000

Fertilization Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	91/100	93/100	95/100	96/100
18		91/100	95/100	93/100	97/100
32		77/100	79/100	79/100	79/100
56		26/100	21/100	26/100	26/100
100		3/100	9/100	9/100	0/100
180		0/100	0/100	0/100	0/100

Analyst: _____ QA: _____

CETIS Analytical Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	15-2683-9591	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:21	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	13-2821-4238	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	06-0452-7701	**Code:**	URC081418	**Client:**	Internal Lab
Sample Date:	14 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	18	32	24		6.45%

Dunnett Multiple Comparison Test

Control vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	18	-0.1481	2.356	0.109	6	CDF	0.8443	Non-Significant Effect
	32*	5.044	2.356	0.109	6	CDF	2.6E-04	Significant Effect
	56*	17.39	2.356	0.109	6	CDF	7.9E-07	Significant Effect
	100*	24.16	2.356	0.109	6	CDF	7.9E-07	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9375	0.7	>>	Yes	Passes Criteria
PMSD	0.06452	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.07244	1.01811	4	240.1	<1.0E-37	Significant Effect
Error	0.0636043	0.0042403	15			
Total	4.13605		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	12.43	13.28	0.0144	Equal Variances
Variances	Levene Equality of Variance Test	5.852	4.893	0.0048	Unequal Variances
Variances	Mod Levene Equality of Variance Test	4.232	4.893	0.0172	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5314	3.878	0.1781	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.723	2.576	0.0849	Normal Distribution
Distribution	D'Agostino Skewness Test	1.368	2.576	0.1712	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	4.841	9.21	0.0889	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1415	0.2235	0.3690	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9354	0.866	0.1963	Normal Distribution

Fertilization Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9375	0.9022	0.9728	0.9400	0.9100	0.9600	0.0111	2.37%	0.00%
18		4	0.9400	0.8989	0.9811	0.9400	0.9100	0.9700	0.0129	2.75%	-0.27%
32		4	0.7850	0.7691	0.8009	0.7900	0.7700	0.7900	0.0050	1.27%	16.27%
56		4	0.2475	0.2077	0.2873	0.2600	0.2100	0.2600	0.0125	10.10%	73.60%
100		4	0.0525	0.0000	0.1241	0.0600	0.0000	0.0900	0.0225	85.71%	94.40%
180		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 15-2683-9591 **Endpoint:** Fertilization Rate **CETIS Version:** CETISv1.9.2
Analyzed: 17 Sep-18 10:21 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.321	1.248	1.394	1.324	1.266	1.369	0.02286	3.46%	0.00%
18		4	1.328	1.238	1.417	1.324	1.266	1.397	0.0281	4.23%	-0.52%
32		4	1.089	1.07	1.108	1.095	1.071	1.095	0.006036	1.11%	17.58%
56		4	0.5203	0.4733	0.5673	0.5351	0.476	0.5351	0.01476	5.67%	60.61%
100		4	0.2084	0.01391	0.4028	0.2394	0.05002	0.3047	0.06111	58.65%	84.23%
180		4	0.05002	0.05001	0.05003	0.05002	0.05002	0.05002	0	0.00%	96.21%

Fertilization Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9100	0.9300	0.9500	0.9600
18		0.9100	0.9500	0.9300	0.9700
32		0.7700	0.7900	0.7900	0.7900
56		0.2600	0.2100	0.2600	0.2600
100		0.0300	0.0900	0.0900	0.0000
180		0.0000	0.0000	0.0000	0.0000

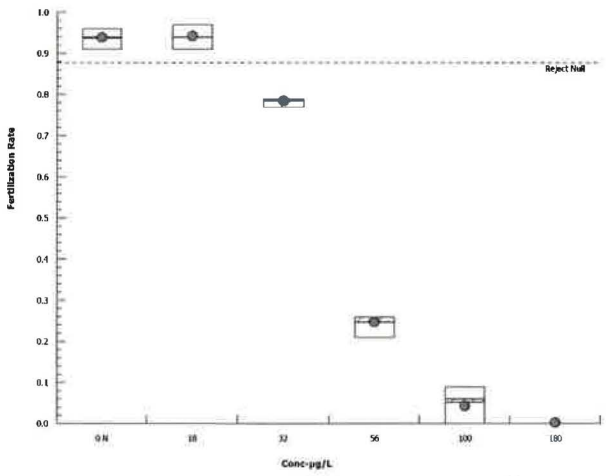
Angular (Corrected) Transformed Detail

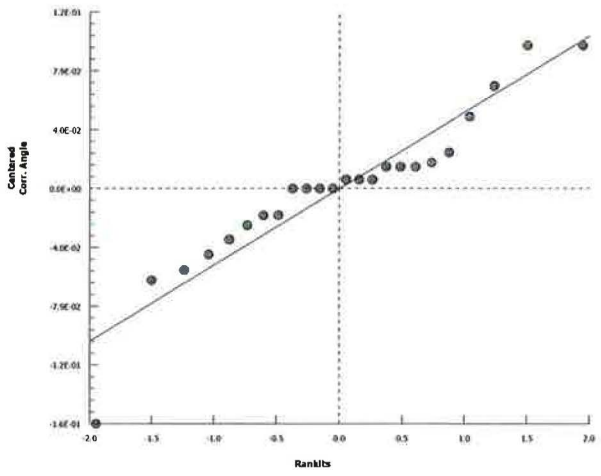
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.266	1.303	1.345	1.369
18		1.266	1.345	1.303	1.397
32		1.071	1.095	1.095	1.095
56		0.5351	0.476	0.5351	0.5351
100		0.1741	0.3047	0.3047	0.05002
180		0.05002	0.05002	0.05002	0.05002

Fertilization Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	91/100	93/100	95/100	96/100
18		91/100	95/100	93/100	97/100
32		77/100	79/100	79/100	79/100
56		26/100	21/100	26/100	26/100
100		3/100	9/100	9/100	0/100
180		0/100	0/100	0/100	0/100

Graphics





Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	14-2931-9379	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:21	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	13-2821-4238	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	06-0452-7701	**Code:**	URC081418	**Client:**	Internal Lab
Sample Date:	14 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9375	0.7	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	22.27	19.04	22.76
EC10	26.55	23.78	27.59
EC15	30.82	28.5	32.39
EC20	33.52	32.24	34.26
EC25	35.61	34.43	36.33
EC40	41.9	40.73	42.66
EC50	46.09	44.77	46.91

Fertilization Rate Summary

			Calculated Variate(A/B)								
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9375	0.9100	0.9600	0.0111	0.0222	2.37%	0.0%	375	400
18		4	0.9400	0.9100	0.9700	0.0129	0.0258	2.75%	-0.27%	376	400
32		4	0.7850	0.7700	0.7900	0.0050	0.0100	1.27%	16.27%	314	400
56		4	0.2475	0.2100	0.2600	0.0125	0.0250	10.10%	73.6%	99	400
100		4	0.0525	0.0000	0.0900	0.0225	0.0450	85.71%	94.4%	21	400
180		4	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	400

Fertilization Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9100	0.9300	0.9500	0.9600
18		0.9100	0.9500	0.9300	0.9700
32		0.7700	0.7900	0.7900	0.7900
56		0.2600	0.2100	0.2600	0.2600
100		0.0300	0.0900	0.0900	0.0000
180		0.0000	0.0000	0.0000	0.0000

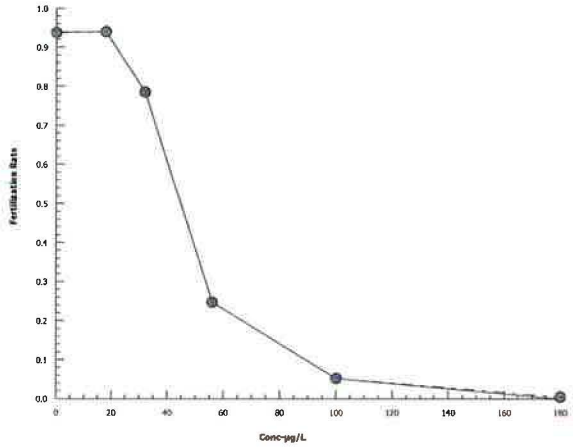
Fertilization Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	91/100	93/100	95/100	96/100
18		91/100	95/100	93/100	97/100
32		77/100	79/100	79/100	79/100
56		26/100	21/100	26/100	26/100
100		3/100	9/100	9/100	0/100
180		0/100	0/100	0/100	0/100

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	14-2931-9379	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	17 Sep-18 10:21	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Analyst: _____ QA: _____

CETIS Measurement Report

Purple Sea Urchin Sperm Cell Fertilization Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	13-2821-4238	**Test Type:**	Fertilization	**Analyst:**	
Start Date:	14 Aug-18 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	14 Aug-18 13:40	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	Ventura Dive	**Age:**	
Sample ID:	06-0452-7701	**Code:**	URC081418	**Client:**	Internal Lab
Sample Date:	14 Aug-18 13:00	**Material:**	Copper chloride	**Project:**	
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Parameter Acceptability Criteria

Parameter	Min	Max	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
Salinity	34	34	32	36	Yes	Passes Criteria
Temperature	14.7	14.8	11	13	Yes	Above Criteria

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.45	2.003	10.9	6.1	6.8	0.35	0.495	7.67%	0
18		2	6.5	1.418	11.58	6.1	6.9	0.4	0.5657	8.7%	0
32		2	6.55	3.373	9.727	6.3	6.8	0.25	0.3536	5.4%	0
56		2	6.55	4.644	8.456	6.4	6.7	0.15	0.2121	3.24%	0
100		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
180		2	6.4	2.588	10.21	6.1	6.7	0.3	0.4243	6.63%	0
Overall		12	6.475	6.279	6.671	6.1	6.9	0.08887	0.3079	4.75%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
18		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
32		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
56		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
180		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
Overall		12	7.9	7.9	7.9	7.9	7.9	0	0	0.00%	0 (0%)

Salinity-ppt

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.0%	0
18		2	34	34	34	34	34	0	0	0.0%	0
32		2	34	34	34	34	34	0	0	0.0%	0
56		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
180		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
18		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
32		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
56		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
100		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
180		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
Overall		12	14.75	14.72	14.78	14.7	14.8	0.01508	0.05222	0.35%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	1	2
0	N	6.8	6.1
18		6.9	6.1
32		6.8	6.3
56		6.7	6.4
100		6.6	6.2
180		6.7	6.1

pH-Units

Conc-µg/L	Code	1	2
0	N	7.9	7.9
18		7.9	7.9
32		7.9	7.9
56		7.9	7.9
100		7.9	7.9
180		7.9	7.9

Salinity-ppt

Conc-µg/L	Code	1	2
0	N	34	34
18		34	34
32		34	34
56		34	34
100		34	34
180		34	34

Temperature-°C

Conc-µg/L	Code	1	2
0	N	14.8	14.7
18		14.8	14.7
32		14.8	14.7
56		14.8	14.7
100		14.8	14.7
180		14.8	14.7

aquatic bioassay & consulting laboratories, inc

September 25, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms EPA/600/R-95-136, 1995.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-5470 Pismo Beach)
DATE RECEIVED:	29 Aug - 18
ABC LAB. NO.:	ACB0818.530

CHRONIC TOPSMELT SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC	=	55.00 %
	TUc	=	1.818
	EC25	=	63.22 %
	EC50	=	77.50 %
GROWTH	NOEC	=	55.00 %
	TUc	=	1.818
	IC25	=	64.18 %
	IC50	=	73.35 %

Yours very truly,

Scott Johnson
Laboratory Director

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	02-7537-3329	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:50	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	05 Sep-18 15:08	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-1452-8355	**Code:**	ACB0818.530tops	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
19-3029-1832	7d Survival Rate	Dunnett Multiple Comparison Test	55	77.5	65.29	1.818	29.3%	✓
21-4203-6258	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	55	77.5	65.29	1.818	23.5%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
01-3676-8448	7d Survival Rate	Linear Interpolation (ICPIN)	EC5	4.714	1.018	83.89	21.21	✓
			EC10	9.429	2.036	86.73	10.61	✓
			EC15	57.51	n/a	70.41	1.739	✓
			EC20	60.37	n/a	78.7	1.657	✓
			EC25	63.22	42.45	85.94	1.582	✓
			EC40	71.79	60.72	90.79	1.393	
			EC50	77.5	64.84	94.38	1.29	
02-3010-5950	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC5	56.84	n/a	57.99	1.759	
			IC10	58.67	n/a	60.98	1.704	
			IC15	60.51	53.88	63.98	1.653	
			IC20	62.34	56.06	67.13	1.604	
			IC25	64.18	57.72	70.17	1.558	
			IC40	69.68	63.16	79.27	1.435	✓
			IC50	73.35	65.97	86.06	1.363	✓

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
01-3676-8448	7d Survival Rate	Control Resp	0.88	0.8	>>	Yes	Passes Criteria
19-3029-1832	7d Survival Rate	Control Resp	0.88	0.8	>>	Yes	Passes Criteria
02-3010-5950	Mean Dry Biomass-mg	Control Resp	1.151	0.85	>>	Yes	Passes Criteria
21-4203-6258	Mean Dry Biomass-mg	Control Resp	1.151	0.85	>>	Yes	Passes Criteria
19-3029-1832	7d Survival Rate	PMSD	0.2929	<<	0.25	No	Above Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.8800	0.7440	1.0000	0.8000	1.0000	0.0490	0.1095	12.45%	0.00%
10		5	0.7200	0.4979	0.9421	0.4000	0.8000	0.0800	0.1789	24.85%	18.18%
32.5		5	0.8400	0.6322	1.0000	0.6000	1.0000	0.0748	0.1673	19.92%	4.55%
55		5	0.8000	0.5517	1.0000	0.6000	1.0000	0.0894	0.2000	25.00%	9.09%
77.5		5	0.4400	0.1162	0.7638	0.2000	0.8000	0.1166	0.2608	59.27%	50.00%
100		5	0.1600	0.0489	0.2711	0.0000	0.2000	0.0400	0.0894	55.90%	81.82%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.151	0.8664	1.435	0.76	1.338	0.1024	0.229	19.90%	0.00%
10		5	0.8916	0.6476	1.136	0.564	1.096	0.0879	0.1965	22.04%	22.52%
32.5		5	1.346	1.223	1.468	1.234	1.488	0.04401	0.0984	7.31%	-16.93%
55		5	1.234	1.119	1.35	1.124	1.374	0.0415	0.09279	7.52%	-7.26%
77.5		5	0.4472	0.1113	0.7831	0.196	0.874	0.121	0.2705	60.49%	61.14%
100		5	0.1836	0.03422	0.333	0	0.336	0.0538	0.1203	65.52%	84.05%

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.8000	1.0000	1.0000	0.8000	0.8000
10		0.8000	0.8000	0.8000	0.8000	0.4000
32.5		0.8000	1.0000	0.8000	1.0000	0.6000
55		1.0000	0.6000	1.0000	0.8000	0.6000
77.5		0.2000	0.4000	0.8000	0.6000	0.2000
100		0.2000	0.2000	0.2000	0.0000	0.2000

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.76	1.216	1.338	1.284	1.156
10		1.096	0.926	0.948	0.924	0.564
32.5		1.296	1.314	1.396	1.488	1.234
55		1.262	1.192	1.374	1.22	1.124
77.5		0.306	0.314	0.874	0.546	0.196
100		0.174	0.208	0.336	0	0.2

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	4/5	5/5	5/5	4/5	4/5
10		4/5	4/5	4/5	4/5	2/5
32.5		4/5	5/5	4/5	5/5	3/5
55		5/5	3/5	5/5	4/5	3/5
77.5		1/5	2/5	4/5	3/5	1/5
100		1/5	1/5	1/5	0/5	1/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-3029-1832	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	02-7537-3329	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:50	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	05 Sep-18 15:08	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-1452-8355	**Code:**	ACB0818.530tops	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	55	77.5	65.29	1.818	29.29%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	1.446	2.362	0.294	8	CDF	0.2418	Non-Significant Effect
		32.5	0.3558	2.362	0.294	8	CDF	0.7077	Non-Significant Effect
		55	0.7116	2.362	0.294	8	CDF	0.5517	Non-Significant Effect
		77.5*	3.874	2.362	0.294	8	CDF	0.0016	Significant Effect
		100*	6.328	2.362	0.294	8	CDF	4.4E-06	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.88	0.8	>>	Yes	Passes Criteria
PMSD	0.2929	<<	0.25	No	Above Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.38025	0.47605	5	12.33	5.4E-06	Significant Effect
Error	0.926503	0.0386043	24			
Total	3.30675		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.183	15.09	0.5233	Equal Variances
Variances	Levene Equality of Variance Test	1.462	3.895	0.2389	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.46	4.248	0.2513	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4416	3.878	0.2936	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.6794	2.576	0.4969	Normal Distribution
Distribution	D'Agostino Skewness Test	0.2853	2.576	0.7754	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.5429	9.21	0.7623	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1384	0.1853	0.1471	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9681	0.9031	0.4891	Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.8800	0.7440	1.0000	0.8000	0.8000	1.0000	0.0490	12.45%	0.00%
10		5	0.7200	0.4979	0.9421	0.8000	0.4000	0.8000	0.0800	24.85%	18.18%
32.5		5	0.8400	0.6322	1.0000	0.8000	0.6000	1.0000	0.0748	19.92%	4.55%
55		5	0.8000	0.5517	1.0000	0.8000	0.6000	1.0000	0.0894	25.00%	9.09%
77.5		5	0.4400	0.1162	0.7638	0.4000	0.2000	0.8000	0.1166	59.27%	50.00%
100		5	0.1600	0.0489	0.2711	0.2000	0.0000	0.2000	0.0400	55.90%	81.82%

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 19-3029-1832 **Endpoint:** 7d Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 21 Sep-18 15:33 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.202	1.04	1.364	1.107	1.107	1.345	0.05833	10.85%	0.00%
10		5	1.023	0.7881	1.257	1.107	0.6847	1.107	0.08449	18.47%	14.95%
32.5		5	1.158	0.9183	1.398	1.107	0.8861	1.345	0.08639	16.68%	3.68%
55		5	1.114	0.8288	1.399	1.107	0.8861	1.345	0.1027	20.61%	7.35%
77.5		5	0.721	0.3753	1.067	0.6847	0.4636	1.107	0.1245	38.62%	40.03%
100		5	0.416	0.2838	0.5483	0.4636	0.2255	0.4636	0.04763	25.60%	65.40%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.8000	1.0000	1.0000	0.8000	0.8000
10		0.8000	0.8000	0.8000	0.8000	0.4000
32.5		0.8000	1.0000	0.8000	1.0000	0.6000
55		1.0000	0.6000	1.0000	0.8000	0.6000
77.5		0.2000	0.4000	0.8000	0.6000	0.2000
100		0.2000	0.2000	0.2000	0.0000	0.2000

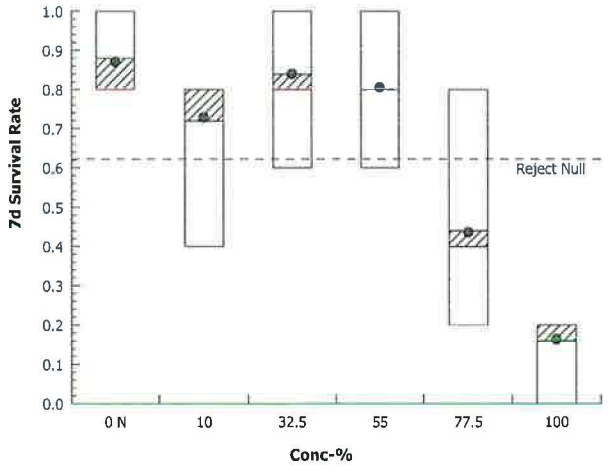
Angular (Corrected) Transformed Detail

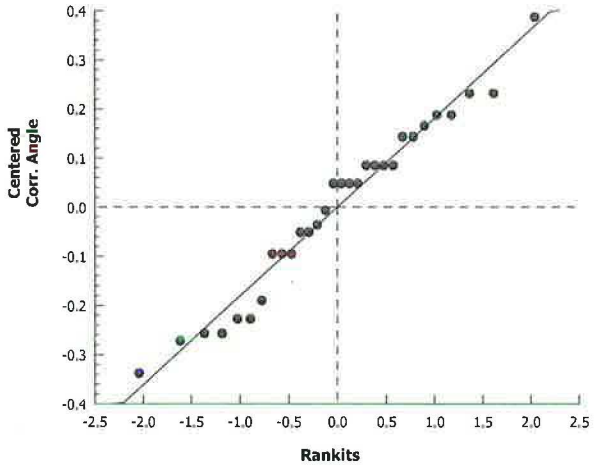
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.107	1.345	1.345	1.107	1.107
10		1.107	1.107	1.107	1.107	0.6847
32.5		1.107	1.345	1.107	1.345	0.8861
55		1.345	0.8861	1.345	1.107	0.8861
77.5		0.4636	0.6847	1.107	0.8861	0.4636
100		0.4636	0.4636	0.4636	0.2255	0.4636

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	4/5	5/5	5/5	4/5	4/5
10		4/5	4/5	4/5	4/5	2/5
32.5		4/5	5/5	4/5	5/5	3/5
55		5/5	3/5	5/5	4/5	3/5
77.5		1/5	2/5	4/5	3/5	1/5
100		1/5	1/5	1/5	0/5	1/5

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	21-4203-6258	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	02-7537-3329	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:50	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	05 Sep-18 15:08	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-1452-8355	**Code:**	ACB0818.530tops	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	55	77.5	65.29	1.818	23.52%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	2.262	2.362	0.271	8	CDF	0.0609	Non-Significant Effect
		32.5	-1.7	2.362	0.271	8	CDF	0.9980	Non-Significant Effect
		55	-0.7295	2.362	0.271	8	CDF	0.9657	Non-Significant Effect
		77.5*	6.139	2.362	0.271	8	CDF	6.5E-06	Significant Effect
		100*	8.439	2.362	0.271	8	CDF	7.9E-07	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.151	0.85	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.44009	1.08802	5	33.13	<1.0E-37	Significant Effect
Error	0.78807	0.0328363	24			
Total	6.22817		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	7.098	15.09	0.2135	Equal Variances
Variances	Levene Equality of Variance Test	1.392	3.895	0.2626	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6239	4.248	0.6836	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4751	3.878	0.2442	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.399	2.576	0.1620	Normal Distribution
Distribution	D'Agostino Skewness Test	0.3886	2.576	0.6976	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	2.107	9.21	0.3487	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1151	0.1853	0.3834	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9676	0.9031	0.4759	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.151	0.8664	1.435	1.216	0.76	1.338	0.1024	19.90%	0.00%
10		5	0.8916	0.6476	1.136	0.926	0.564	1.096	0.0879	22.04%	22.52%
32.5		5	1.346	1.223	1.468	1.314	1.234	1.488	0.04401	7.31%	-16.93%
55		5	1.234	1.119	1.35	1.22	1.124	1.374	0.0415	7.52%	-7.26%
77.5		5	0.4472	0.1113	0.7831	0.314	0.196	0.874	0.121	60.49%	61.14%
100		5	0.1836	0.03422	0.333	0.2	0	0.336	0.0538	65.52%	84.05%

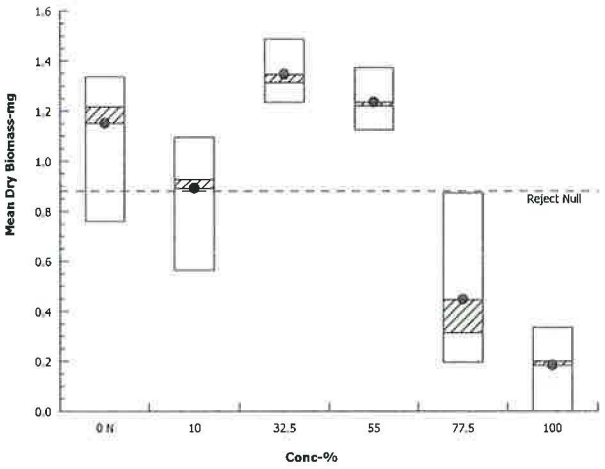
Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

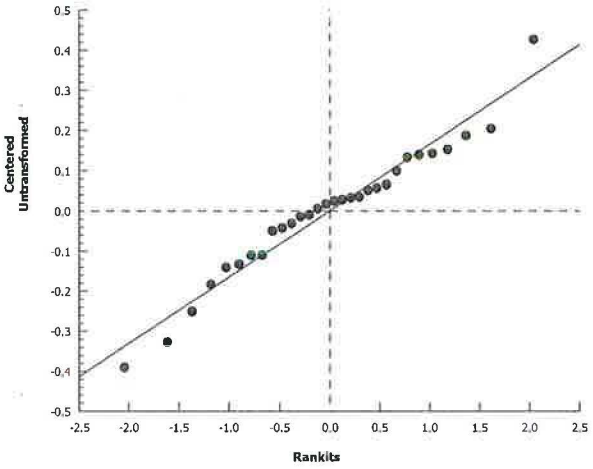
Analysis ID:	21-4203-6258	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.76	1.216	1.338	1.284	1.156
10		1.096	0.926	0.948	0.924	0.564
32.5		1.296	1.314	1.396	1.488	1.234
55		1.262	1.192	1.374	1.22	1.124
77.5		0.306	0.314	0.874	0.546	0.196
100		0.174	0.208	0.336	0	0.2

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-3676-8448	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	02-7537-3329	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:50	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	05 Sep-18 15:08	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-1452-8355	**Code:**	ACB0818.530tops	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.88	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	4.714	1.018	83.89	21.21	1.192	98.25
EC10	9.429	2.036	86.73	10.61	1.153	49.12
EC15	57.51	n/a	70.41	1.739	1.42	n/a
EC20	60.37	n/a	78.7	1.657	1.271	n/a
EC25	63.22	42.45	85.94	1.582	1.164	2.356
EC40	71.79	60.72	90.79	1.393	1.101	1.647
EC50	77.5	64.84	94.38	1.29	1.06	1.542

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	5	0.8800	0.8000	1.0000	0.0490	0.1095	12.45%	0.0%	22	25
10		5	0.7200	0.4000	0.8000	0.0800	0.1789	24.85%	18.18%	18	25
32.5		5	0.8400	0.6000	1.0000	0.0748	0.1673	19.92%	4.55%	21	25
55		5	0.8000	0.6000	1.0000	0.0894	0.2000	25.00%	9.09%	20	25
77.5		5	0.4400	0.2000	0.8000	0.1166	0.2608	59.27%	50.0%	11	25
100		5	0.1600	0.0000	0.2000	0.0400	0.0894	55.90%	81.82%	4	25

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.8000	1.0000	1.0000	0.8000	0.8000
10		0.8000	0.8000	0.8000	0.8000	0.4000
32.5		0.8000	1.0000	0.8000	1.0000	0.6000
55		1.0000	0.6000	1.0000	0.8000	0.6000
77.5		0.2000	0.4000	0.8000	0.6000	0.2000
100		0.2000	0.2000	0.2000	0.0000	0.2000

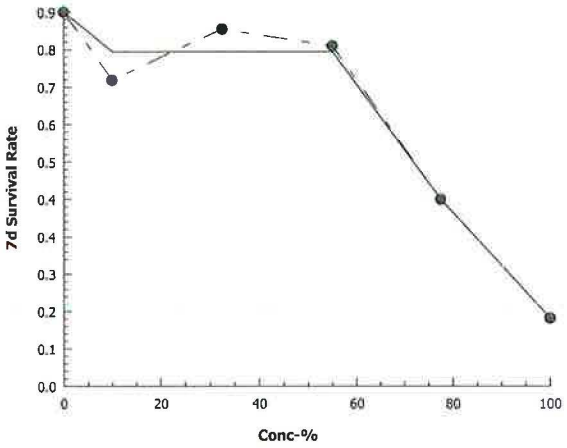
7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	4/5	5/5	5/5	4/5	4/5
10		4/5	4/5	4/5	4/5	2/5
32.5		4/5	5/5	4/5	5/5	3/5
55		5/5	3/5	5/5	4/5	3/5
77.5		1/5	2/5	4/5	3/5	1/5
100		1/5	1/5	1/5	0/5	1/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-3676-8448	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	02-3010-5950	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	02-7537-3329	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:50	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	05 Sep-18 15:08	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	05-1452-8355	**Code:**	ACB0818.530tops	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	359749	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.151	0.85	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	56.84	n/a	57.99	1.759	1.724	n/a
IC10	58.67	n/a	60.98	1.704	1.64	n/a
IC15	60.51	53.88	63.98	1.653	1.563	1.856
IC20	62.34	56.06	67.13	1.604	1.49	1.784
IC25	64.18	57.72	70.17	1.558	1.425	1.732
IC40	69.68	63.16	79.27	1.435	1.262	1.583
IC50	73.35	65.97	86.06	1.363	1.162	1.516

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	5	1.151	0.76	1.338	0.1024	0.229	19.90%	0.0%
10		5	0.8916	0.564	1.096	0.0879	0.1965	22.04%	22.52%
32.5		5	1.346	1.234	1.488	0.04401	0.0984	7.31%	-16.93%
55		5	1.234	1.124	1.374	0.0415	0.09279	7.52%	-7.27%
77.5		5	0.4472	0.196	0.874	0.121	0.2705	60.49%	61.14%
100		5	0.1836	0	0.336	0.0538	0.1203	65.52%	84.05%

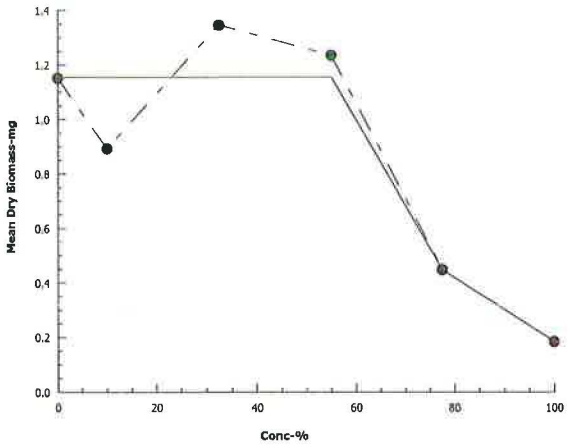
Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.76	1.216	1.338	1.284	1.156
10		1.096	0.926	0.948	0.924	0.564
32.5		1.296	1.314	1.396	1.488	1.234
55		1.262	1.192	1.374	1.22	1.124
77.5		0.306	0.314	0.874	0.546	0.196
100		0.174	0.208	0.336	0	0.2

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	02-3010-5950	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:33	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	02-7537-3329	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:50	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Water
Ending Date:	05 Sep-18 15:08	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	05-1452-8355	**Code:**	ACB0818.530tops	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	6.75	6.401	7.099	6.2	7.3	0.1476	0.4175	6.19%	0
10		8	6.7	6.447	6.953	6.1	7.1	0.1069	0.3024	4.51%	0
32.5		8	6.75	6.457	7.043	6.1	7.2	0.1239	0.3505	5.19%	0
55		8	6.787	6.461	7.114	6.1	7.2	0.1381	0.3907	5.76%	0
77.5		8	6.963	6.6	7.325	6	7.4	0.1535	0.434	6.23%	0
100		8	7.137	6.673	7.602	6	7.7	0.1963	0.5553	7.78%	0
Overall		48	6.848	6.725	6.971	6	7.7	0.06102	0.4228	6.17%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.675	7.601	7.749	7.6	7.8	0.03134	0.08864	1.16%	0
10		8	7.675	7.578	7.772	7.5	7.8	0.04119	0.1165	1.52%	0
32.5		8	7.562	7.486	7.639	7.5	7.7	0.03239	0.09161	1.21%	0
55		8	7.587	7.458	7.717	7.4	7.9	0.05489	0.1553	2.05%	0
77.5		8	7.525	7.378	7.672	7.4	7.9	0.06196	0.1753	2.33%	0
100		8	7.513	7.368	7.657	7.4	7.9	0.06105	0.1727	2.3%	0
Overall		48	7.59	7.547	7.632	7.4	7.9	0.0211	0.1462	1.93%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	25	25	25	25	25	0	0	0.0%	0
10		8	25	25	25	25	25	0	0	0.0%	0
32.5		8	25	25	25	25	25	0	0	0.0%	0
55		8	25	25	25	25	25	0	0	0.0%	0
77.5		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
Overall		48	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	21	21	21	21	21	0	0	0.0%	0
10		8	21	21	21	21	21	0	0	0.0%	0
32.5		8	21	21	21	21	21	0	0	0.0%	0
55		8	21	21	21	21	21	0	0	0.0%	0
77.5		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
Overall		48	21	21	21	21	21	0	0	0.00%	0 (0%)

Pacific Topsmelt 7-d Survival and Growth Test									Aquatic Bioassay & Consulting Labs, Inc.
Dissolved Oxygen-mg/L									
Conc-%	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	6.6	7.1	7.3	7.1	6.2	6.6	6.9	6.2
10		6.6	7	7.1	6.7	6.6	6.8	6.7	6.1
32.5		6.8	7.1	7.2	6.8	6.9	6.6	6.5	6.1
55		6.8	7.1	7.2	6.6	7.1	7	6.4	6.1
77.5		6.8	7.1	7.1	7.1	7.3	7.4	6.9	6
100		7.2	7.1	7.1	7.6	7.7	7.6	6.8	6
pH-Units									
Conc-%	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	7.6	7.6	7.7	7.6	7.7	7.8	7.6	7.8
10		7.6	7.5	7.6	7.7	7.8	7.8	7.6	7.8
32.5		7.5	7.5	7.5	7.6	7.7	7.7	7.5	7.5
55		7.5	7.5	7.5	7.6	7.6	7.7	7.4	7.9
77.5		7.4	7.4	7.4	7.5	7.6	7.6	7.4	7.9
100		7.4	7.4	7.4	7.5	7.5	7.6	7.4	7.9
Salinity-ppt									
Conc-%	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	25	25	25	25	25	25	25	25
10		25	25	25	25	25	25	25	25
32.5		25	25	25	25	25	25	25	25
55		25	25	25	25	25	25	25	25
77.5		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25
Temperature-°C									
Conc-%	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	21	21	21	21	21	21	21	21
10		21	21	21	21	21	21	21	21
32.5		21	21	21	21	21	21	21	21
55		21	21	21	21	21	21	21	21
77.5		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21

aquatic bioassay & consulting laboratories, inc

September 25, 2018

Abalone Coast Analytical
141 Suburban Rd., STE C-1
San Luis Obispo, CA 93401

Dear Client:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Marine and Freshwater Organisms EPA-821-R-02-012.* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Abalone Coast Analytical
SAMPLE I.D.:	R/O Brine (18-5470 Pismo Beach)
DATE RECEIVED:	29 Aug - 18
ABC LAB. NO.:	ACB0818.530

ACUTE SILVERSIDES LARVAE SURVIVAL BIOASSAY

SURVIVAL = 0.00 % Survival in 100 % Sample

EC25 = 43.75 %
EC50 = 55.00 %
*TUa = 1.818
* TU(a) Is calculated by: 100/EC50

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-3338-2437	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	29 Aug-18 16:00	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Sep-18 14:13	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-4565-5605	**Code:**	ACB0818.530amen	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
19-8131-7643	96h Survival Rate	Dunnett Multiple Comparison Test	32.5	55	42.28	3.077	16.3%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
19-3461-3964	96h Survival Rate	Linear Interpolation (ICPIN)	EC5	34.75	n/a	35.42	2.878
			EC10	37	n/a	38.35	2.703
			EC15	39.25	32.24	41.28	2.548
			EC20	41.5	35.23	44.2	2.41
			EC25	43.75	38.35	47.12	2.286
			EC40	50.5	45.1	56.67	1.98
			EC50	55	49.32	62.85	1.818

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
19-3461-3964	96h Survival Rate	Control Resp	0.95	0.9	>>	Yes	Passes Criteria
19-8131-7643	96h Survival Rate	Control Resp	0.95	0.9	>>	Yes	Passes Criteria

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9500	0.7909	1.0000	0.8000	1.0000	0.0500	0.1000	10.53%	0.00%
10		4	0.9250	0.6863	1.0000	0.7000	1.0000	0.0750	0.1500	16.22%	2.63%
32.5		4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	-2.63%
55		4	0.4750	0.3227	0.6273	0.4000	0.6000	0.0479	0.0957	20.16%	50.00%
77.5		4	0.1750	0.0227	0.3273	0.1000	0.3000	0.0479	0.0957	54.71%	81.58%
100		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	0.8000	1.0000
10		0.7000	1.0000	1.0000	1.0000
32.5		0.9000	1.0000	1.0000	1.0000
55		0.5000	0.4000	0.4000	0.6000
77.5		0.1000	0.3000	0.1000	0.2000
100		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	8/10	10/10
10		7/10	10/10	10/10	10/10
32.5		9/10	10/10	10/10	10/10
55		5/10	4/10	4/10	6/10
77.5		1/10	3/10	1/10	2/10
100		0/10	0/10	0/10	0/10

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-8131-7643	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:39	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	09-3338-2437	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	29 Aug-18 16:00	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Sep-18 14:13	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-4565-5605	**Code:**	ACB0818.530amen	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	32.5	55	42.28	3.077	16.28%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		10	0.2914	2.356	0.234	6	CDF	0.6931	Non-Significant Effect
		32.5	-0.3565	2.356	0.234	6	CDF	0.8946	Non-Significant Effect
		55*	5.784	2.356	0.234	6	CDF	6.7E-05	Significant Effect
		77.5*	9.187	2.356	0.234	6	CDF	1.1E-06	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.95	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.91596	0.728989	4	36.81	1.4E-07	Significant Effect
Error	0.297029	0.0198019	15			
Total	3.21299		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	2.98	13.28	0.5612	Equal Variances
Variances	Levene Equality of Variance Test	1.256	4.893	0.3301	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.1629	4.893	0.9539	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.035	3.878	0.0102	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.9261	2.576	0.3544	Normal Distribution
Distribution	D'Agostino Skewness Test	2.108	2.576	0.0350	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	5.302	9.21	0.0706	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.2298	0.2235	0.0070	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.8863	0.866	0.0230	Normal Distribution

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	0.00%
10		4	0.9250	0.6863	1.0000	1.0000	0.7000	1.0000	0.0750	16.22%	2.63%
32.5		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	-2.63%
55		4	0.4750	0.3227	0.6273	0.4500	0.4000	0.6000	0.0479	20.16%	50.00%
77.5		4	0.1750	0.0227	0.3273	0.1500	0.1000	0.3000	0.0479	54.71%	81.58%
100		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 19-8131-7643 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 21 Sep-18 15:39 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.336	1.093	1.578	1.412	1.107	1.412	0.07622	11.41%	0.00%
10		4	1.307	0.972	1.642	1.412	0.9912	1.412	0.1052	16.10%	2.17%
32.5		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	-2.66%
55		4	0.7602	0.6068	0.9136	0.7351	0.6847	0.8861	0.0482	12.68%	43.09%
77.5		4	0.4217	0.2232	0.6202	0.3927	0.3218	0.5796	0.06237	29.58%	68.43%
100		4	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.00%	88.11%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	0.8000	1.0000
10		0.7000	1.0000	1.0000	1.0000
32.5		0.9000	1.0000	1.0000	1.0000
55		0.5000	0.4000	0.4000	0.6000
77.5		0.1000	0.3000	0.1000	0.2000
100		0.0000	0.0000	0.0000	0.0000

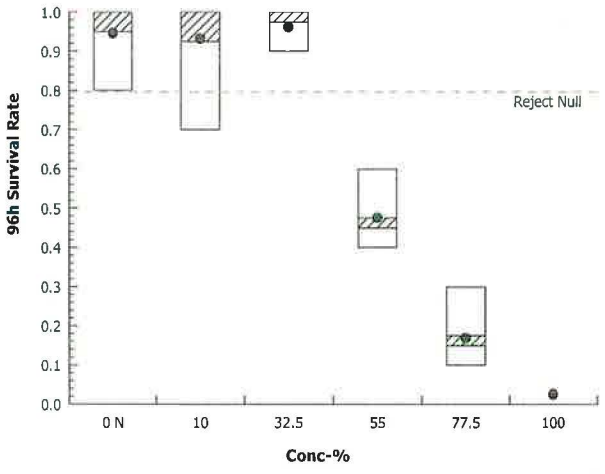
Angular (Corrected) Transformed Detail

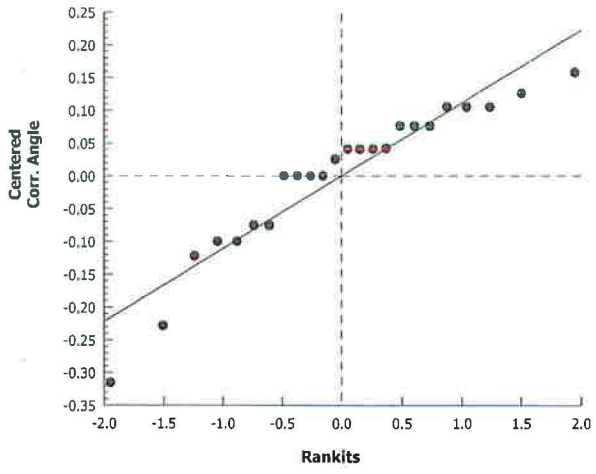
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.412	1.412	1.107	1.412
10		0.9912	1.412	1.412	1.412
32.5		1.249	1.412	1.412	1.412
55		0.7854	0.6847	0.6847	0.8861
77.5		0.3218	0.5796	0.3218	0.4636
100		0.1588	0.1588	0.1588	0.1588

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	8/10	10/10
10		7/10	10/10	10/10	10/10
32.5		9/10	10/10	10/10	10/10
55		5/10	4/10	4/10	6/10
77.5		1/10	3/10	1/10	2/10
100		0/10	0/10	0/10	0/10

Graphics





Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-3461-3964	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:39	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	09-3338-2437	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	29 Aug-18 16:00	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Sep-18 14:13	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-4565-5605	**Code:**	ACB0818.530amen	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.95	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	34.75	n/a	35.42	2.878	2.823	n/a
EC10	37	n/a	38.35	2.703	2.608	n/a
EC15	39.25	32.24	41.28	2.548	2.423	3.102
EC20	41.5	35.23	44.2	2.41	2.262	2.839
EC25	43.75	38.35	47.12	2.286	2.122	2.608
EC40	50.5	45.1	56.67	1.98	1.765	2.217
EC50	55	49.32	62.85	1.818	1.591	2.028

96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	4	0.9500	0.8000	1.0000	0.0500	0.1000	10.53%	0.0%	38	40
10		4	0.9250	0.7000	1.0000	0.0750	0.1500	16.22%	2.63%	37	40
32.5		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	-2.63%	39	40
55		4	0.4750	0.4000	0.6000	0.0479	0.0957	20.16%	50.0%	19	40
77.5		4	0.1750	0.1000	0.3000	0.0479	0.0957	54.71%	81.58%	7	40
100		4	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	40

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	0.8000	1.0000
10		0.7000	1.0000	1.0000	1.0000
32.5		0.9000	1.0000	1.0000	1.0000
55		0.5000	0.4000	0.4000	0.6000
77.5		0.1000	0.3000	0.1000	0.2000
100		0.0000	0.0000	0.0000	0.0000

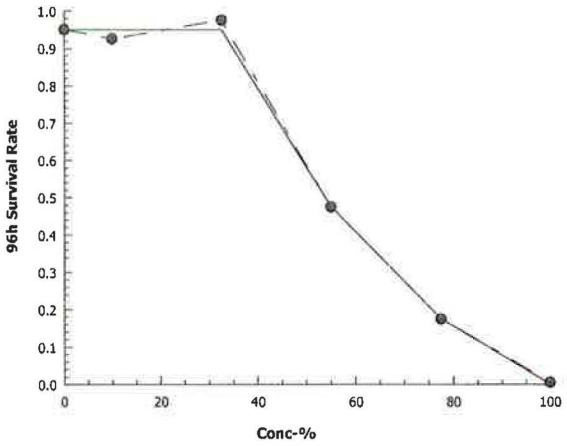
96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	8/10	10/10
10		7/10	10/10	10/10	10/10
32.5		9/10	10/10	10/10	10/10
55		5/10	4/10	4/10	6/10
77.5		1/10	3/10	1/10	2/10
100		0/10	0/10	0/10	0/10

Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	19-3461-3964	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:39	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-3338-2437	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	29 Aug-18 16:00	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Laboratory Seawater
Ending Date:	02 Sep-18 14:13	**Species:**	Menidia beryllina	**Brine:**	Not Applicable
Duration:	94h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	02-4565-5605	**Code:**	ACB0818.530amen	**Client:**	Abalone Coast Analytical
Sample Date:	28 Aug-18 09:45	**Material:**	Sample Water	**Project:**	18-5470 Pismo Beach
Receipt Date:	29 Aug-18 11:30	**Source:**	Bioassay Report		
Sample Age:	30h (5.5 °C)	**Station:**	R/O Brine		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	6.667	5.169	8.164	6.1	7.3	0.348	0.6028	9.04%	0
10		3	6.5	4.871	8.129	5.8	7.1	0.3786	0.6557	10.09%	0
32.5		3	6.7	5.317	8.083	6.1	7.2	0.3215	0.5568	8.31%	0
55		3	6.667	5.149	8.184	6	7.2	0.3528	0.611	9.17%	0
77.5		3	6.633	5.221	8.046	6	7.1	0.3283	0.5686	8.57%	0
100		3	6.667	4.583	8.75	5.7	7.2	0.4842	0.8386	12.58%	0
Overall		18	6.639	6.367	6.911	5.7	7.3	0.1289	0.5468	8.24%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.667	7.523	7.81	7.6	7.7	0.03333	0.05773	0.75%	0
10		3	7.7	7.27	8.13	7.6	7.9	0.1	0.1732	2.25%	0
32.5		3	7.667	6.95	8.384	7.5	8	0.1667	0.2887	3.77%	0
55		3	7.7	6.839	8.561	7.5	8.1	0.2	0.3464	4.5%	0
77.5		3	7.667	6.519	8.814	7.4	8.2	0.2667	0.4619	6.03%	0
100		3	7.7	6.409	8.991	7.4	8.3	0.3	0.5196	6.75%	0
Overall		18	7.683	7.538	7.828	7.4	8.3	0.06872	0.2915	3.80%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	25	25	25	25	25	0	0	0.0%	0
10		3	25	25	25	25	25	0	0	0.0%	0
32.5		3	25	25	25	25	25	0	0	0.0%	0
55		3	25	25	25	25	25	0	0	0.0%	0
77.5		3	25	25	25	25	25	0	0	0.0%	0
100		3	25	25	25	25	25	0	0	0.0%	0
Overall		18	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	24	24	24	24	24	0	0	0.0%	0
10		3	24.07	23.78	24.35	24	24.2	0.06664	0.1154	0.48%	0
32.5		3	24.07	23.78	24.35	24	24.2	0.06664	0.1154	0.48%	0
55		3	24.1	23.67	24.53	24	24.3	0.1	0.1732	0.72%	0
77.5		3	24.1	23.67	24.53	24	24.3	0.1	0.1732	0.72%	0
100		3	24.13	23.56	24.71	24	24.4	0.1333	0.2309	0.96%	0
Overall		18	24.08	24.01	24.15	24	24.4	0.03189	0.1353	0.56%	0 (0%)

Inland Silverside 96-h Acute Survival Test				Aquatic Bioassay & Consulting Labs, Inc.
Dissolved Oxygen-mg/L				
Conc-%	**Code**	**1**	**2**	**3**
0	N	6.6	7.3	6.1
10		6.6	7.1	5.8
32.5		6.8	7.2	6.1
55		6.8	7.2	6
77.5		6.8	7.1	6
100		7.2	7.1	5.7
pH-Units				
Conc-%	**Code**	**1**	**2**	**3**
0	N	7.6	7.7	7.7
10		7.6	7.6	7.9
32.5		7.5	7.5	8
55		7.5	7.5	8.1
77.5		7.4	7.4	8.2
100		7.4	7.4	8.3
Salinity-ppt				
Conc-%	**Code**	**1**	**2**	**3**
0	N	25	25	25
10		25	25	25
32.5		25	25	25
55		25	25	25
77.5		25	25	25
100		25	25	25
Temperature-°C				
Conc-%	**Code**	**1**	**2**	**3**
0	N	24	24	24
10		24.2	24	24
32.5		24.2	24	24
55		24.3	24	24
77.5		24.3	24	24
100		24.4	24	24

Temp. deg. C = 10.5°C

Chlorine (mg/L) = <0.1

NH3 (mg/L) 10.7

Abalone Coast Analytical, Inc.

141 Suburban Rd, STE C-1 ,San Luis Obispo CA 93401
Phone: (805) 595-1080 Fax: (805) 595-1075

Rush Options

24 Hr	48 Hr	3 Day	5 Day	7 Day

Lab Reference # B-5470

Client Full Name/ Business: | Address | City | State | Zip

City of Pismo Beach

Bill To: **Same**

Phone # (805)773-7075
Fax #
Cell #

Sign/Print Samplers Full Name
Lauren Herrick

Project: R/O Brine Analysis
Contact Full Name: Russ Fleming

Location	Date/Time	ANALYSIS	Matrix	# Jars	Type / Preserve	LAB ID #
loc. 6 **R/O Brine**	8/28/18 0945	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	24 1Gal	5x p/unp half gal, p/unp 1 liter	-1
	8/28/18 0945	EPA 625, EPA, 608, EPA 624, TCDD Equivalents		20	6x Ag/unp, 3x p/HNO3 1 liter	
	8/28/18 0945	Acute Tox:Silversides			3x VV/HCl, 1x VV/unp	
	8/28/18 0945	Chronic Tox: Topsmelt			1x p/unp 5 gal	
oc. 2 **R/O Feed Water**	8/28/18 1001	BOD,TSS, TCR, As, Cu, Ni, Gross Beta, Potassium-40	AQ	15	p/unp half gal, p/unp 1 liter	-2
	8/28/18 1001	EPA 625, EPA, 608, EPA 624, TCDD Equivalents			6x Ag/unp, 3x p/HNO3 1 liter	
	8/28/18 1004				3x VV/HCl, 1x VV/unp	

Relinquished By: Lauren Herrick	Received By:	Received By:	Lab:
Date/Time: 8/28/18 1015	Date/Time: 8/28/18 1043	Date/Time: 8/28/18 1224	
Lab:	Lab:	Lab:	Lab: 8-29-18/1130 Lab:

Method Of Shipment:
Client
Courier VAN
Other:

Condition
Intact (y/n) yes
Sediment no
Temp. 10.5°C
On Ice Yes No

Lab use only
Sent to:
State Forms sent:

Remarks:

ShareFile:

Email: KKranz@carollo.com, rfleming@pismobeach.org

Due Date:

aquatic bioassay & consulting laboratories, inc

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

DATE: 28 August - 2018

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 100.00 ug/l

EC25 = 108.00 ug/l
EC50 = 156.00 ug/l

ENDPOINT: GROWTH

NOEC = 100.00 ug/l

IC25 = 132.70 ug/l
IC50 = 165.40 ug/l

Yours very truly,

Scott Johnson
Laboratory Director

*25ppt

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	12-6347-5962	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:45	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	05 Sep-18 15:00	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	02-2190-9208	**Code:**	TOPS082918-25pp	**Client:**	Internal Lab
Sample Date:	29 Aug-18 15:45	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:	05 Sep-18 15:00	**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
12-4845-6173	7d Survival Rate	Dunnett Multiple Comparison Test	100	180	134.2		22.4%	✓
18-1823-8997	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	100	180	134.2		37.1%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-3204-3628	7d Survival Rate	Linear Interpolation (ICPIN)	EC5	66.56	8.72	118.7		✓
			EC10	77.12	49.21	125.6		✓
			EC15	87.68	56.66	132.2		✓
			EC20	98.24	62.75	139.9		✓
			EC25	108	66.67	146		✓
			EC40	136.8	78.67	174.6		✓
			EC50	156	109.5	201.5		✓
02-4186-9715	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC5	106.5	48.68	109.5		
			IC10	113.1	64.22	119.1		
			IC15	119.6	79.34	129.9		
			IC20	126.1	92.5	139.8		
			IC25	132.7	102.9	150.9		
			IC40	152.3	128.8	181.9		
			IC50	165.4	144.9	213.4		

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
12-4845-6173	7d Survival Rate	Control Resp	0.96	0.8	>>	Yes	Passes Criteria
14-3204-3628	7d Survival Rate	Control Resp	0.96	0.8	>>	Yes	Passes Criteria
02-4186-9715	Mean Dry Biomass-mg	Control Resp	1.042	0.85	>>	Yes	Passes Criteria
18-1823-8997	Mean Dry Biomass-mg	Control Resp	1.042	0.85	>>	Yes	Passes Criteria
12-4845-6173	7d Survival Rate	PMSD	0.2244	<<	0.25	No	Passes Criteria

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9600	0.8489	1.0000	0.8000	1.0000	0.0400	0.0894	9.32%	0.00%
56		5	0.9600	0.8489	1.0000	0.8000	1.0000	0.0400	0.0894	9.32%	0.00%
100		5	0.7600	0.4362	1.0000	0.4000	1.0000	0.1166	0.2608	34.31%	20.83%
180		5	0.3600	0.1522	0.5678	0.2000	0.6000	0.0748	0.1673	46.48%	62.50%
320		5	0.0800	0.0000	0.2160	0.0000	0.2000	0.0490	0.1095	136.93%	91.67%
560		5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.042	0.9485	1.135	0.952	1.126	0.03354	0.075	7.20%	0.00%
56		5	1.234	0.806	1.663	0.902	1.762	0.1543	0.3451	27.95%	-18.51%
100		5	1.227	0.7579	1.697	0.714	1.734	0.169	0.378	30.80%	-17.82%
180		5	0.4532	0.162	0.7444	0.258	0.838	0.1049	0.2345	51.74%	56.49%
320		5	0.1208	-0.087	0.3286	0	0.338	0.07485	0.1674	138.54%	88.40%
560		5	0	0	0	0	0	0	0		100.00%

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.8000	1.0000	1.0000
56		1.0000	0.8000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.8000	0.6000	0.4000
180		0.6000	0.4000	0.2000	0.2000	0.4000
320		0.2000	0.0000	0.2000	0.0000	0.0000
560		0.0000	0.0000	0.0000	0.0000	0.0000

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.126	0.952	1.086	1.07	0.974
56		1.762	0.902	1.374	1.144	0.99
100		1.734	1.412	1.114	1.162	0.714
180		0.838	0.32	0.34	0.258	0.51
320		0.338	0	0.266	0	0
560		0	0	0	0	0

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	4/5	5/5	5/5
56		5/5	4/5	5/5	5/5	5/5
100		5/5	5/5	4/5	3/5	2/5
180		3/5	2/5	1/5	1/5	2/5
320		1/5	0/5	1/5	0/5	0/5
560		0/5	0/5	0/5	0/5	0/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	12-4845-6173	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:18	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	12-6347-5962	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:45	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	05 Sep-18 15:00	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-2190-9208	**Code:**	TOPS082918-25pp	**Client:**	Internal Lab
Sample Date:	29 Aug-18 15:45	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:	05 Sep-18 15:00	**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	180	134.2		22.44%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		56	0	2.305	0.257	8	CDF	0.8000	Non-Significant Effect
		100	2.01	2.305	0.257	8	CDF	0.0864	Non-Significant Effect
		180*	5.934	2.305	0.257	8	CDF	1.6E-05	Significant Effect
		320*	8.768	2.305	0.257	8	CDF	5.0E-07	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.96	0.8	>>	Yes	Passes Criteria
PMSD	0.2244	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.74075	0.935189	4	30.14	<1.0E-37	Significant Effect
Error	0.620619	0.0310309	20			
Total	4.36137		24			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	5.819	13.28	0.2131	Equal Variances
Variances	Levene Equality of Variance Test	2.986	4.431	0.0439	Equal Variances
Variances	Mod Levene Equality of Variance Test	2.452	4.893	0.0911	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.089	3.878	0.0075	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.3996	2.576	0.6895	Normal Distribution
Distribution	D'Agostino Skewness Test	0.7329	2.576	0.4636	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.6968	9.21	0.7058	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.2224	0.2018	0.0025	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9217	0.8877	0.0560	Normal Distribution

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9600	0.8489	1.0000	1.0000	0.8000	1.0000	0.0400	9.32%	0.00%
56		5	0.9600	0.8489	1.0000	1.0000	0.8000	1.0000	0.0400	9.32%	0.00%
100		5	0.7600	0.4362	1.0000	0.8000	0.4000	1.0000	0.1166	34.31%	20.83%
180		5	0.3600	0.1522	0.5678	0.4000	0.2000	0.6000	0.0748	46.48%	62.50%
320		5	0.0800	0.0000	0.2160	0.0000	0.0000	0.2000	0.0490	136.93%	91.67%
560		5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 12-4845-6173 **Endpoint:** 7d Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 21 Sep-18 15:18 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.298	1.165	1.43	1.345	1.107	1.345	0.04763	8.21%	0.00%
56		5	1.298	1.165	1.43	1.345	1.107	1.345	0.04763	8.21%	0.00%
100		5	1.074	0.7143	1.433	1.107	0.6847	1.345	0.1294	26.96%	17.26%
180		5	0.6366	0.4156	0.8575	0.6847	0.4636	0.8861	0.07959	27.96%	50.95%
320		5	0.3208	0.1588	0.4827	0.2255	0.2255	0.4636	0.05833	40.66%	75.28%
560		5	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0	0.00%	82.62%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.8000	1.0000	1.0000
56		1.0000	0.8000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.8000	0.6000	0.4000
180		0.6000	0.4000	0.2000	0.2000	0.4000
320		0.2000	0.0000	0.2000	0.0000	0.0000
560		0.0000	0.0000	0.0000	0.0000	0.0000

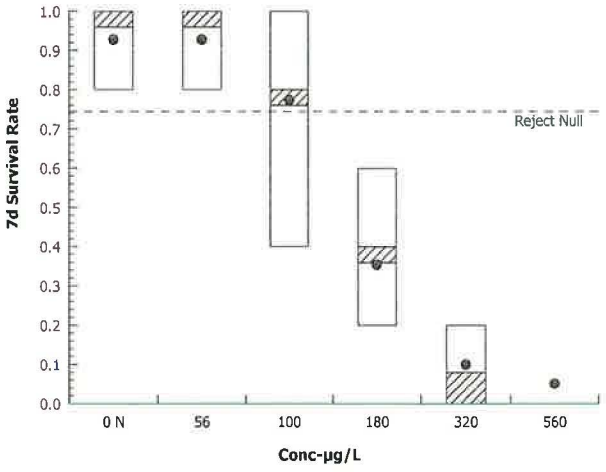
Angular (Corrected) Transformed Detail

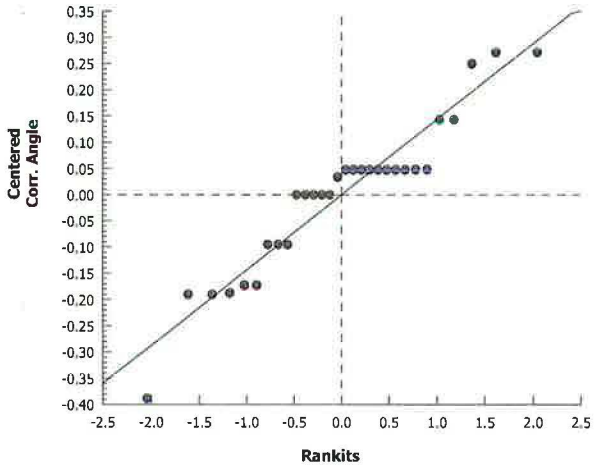
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.345	1.345	1.107	1.345	1.345
56		1.345	1.107	1.345	1.345	1.345
100		1.345	1.345	1.107	0.8861	0.6847
180		0.8861	0.6847	0.4636	0.4636	0.6847
320		0.4636	0.2255	0.4636	0.2255	0.2255
560		0.2255	0.2255	0.2255	0.2255	0.2255

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	4/5	5/5	5/5
56		5/5	4/5	5/5	5/5	5/5
100		5/5	5/5	4/5	3/5	2/5
180		3/5	2/5	1/5	1/5	2/5
320		1/5	0/5	1/5	0/5	0/5
560		0/5	0/5	0/5	0/5	0/5

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	18-1823-8997	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:19	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	12-6347-5962	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:45	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	05 Sep-18 15:00	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-2190-9208	**Code:**	TOPS082918-25pp	**Client:**	Internal Lab
Sample Date:	29 Aug-18 15:45	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:	05 Sep-18 15:00	**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	180	134.2		37.05%

Dunnett Multiple Comparison Test

Control vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	56	-1.151	2.305	0.386	8	CDF	0.9838	Non-Significant Effect
	100	-1.108	2.305	0.386	8	CDF	0.9819	Non-Significant Effect
	180*	3.514	2.305	0.386	8	CDF	0.0038	Significant Effect
	320*	5.499	2.305	0.386	8	CDF	4.2E-05	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1.042	0.85	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.04982	1.26246	4	18.01	2.1E-06	Significant Effect
Error	1.40217	0.0701086	20			
Total	6.452		24			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	8.88	13.28	0.0642	Equal Variances
Variances	Levene Equality of Variance Test	2.071	4.431	0.1228	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.357	4.893	0.2951	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.7041	3.878	0.0660	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.8806	2.576	0.3785	Normal Distribution
Distribution	D'Agostino Skewness Test	1.083	2.576	0.2790	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.948	9.21	0.3776	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1663	0.2018	0.0726	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9472	0.8877	0.2172	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.042	0.9485	1.135	1.07	0.952	1.126	0.03354	7.20%	0.00%
56		5	1.234	0.806	1.663	1.144	0.902	1.762	0.1543	27.95%	-18.51%
100		5	1.227	0.7579	1.697	1.162	0.714	1.734	0.169	30.80%	-17.82%
180		5	0.4532	0.162	0.7444	0.34	0.258	0.838	0.1049	51.74%	56.49%
320		5	0.1208	-0.087	0.3286	0	0	0.338	0.07485	138.54%	88.40%
560		5	0	0	0	0	0	0	0		100.00%

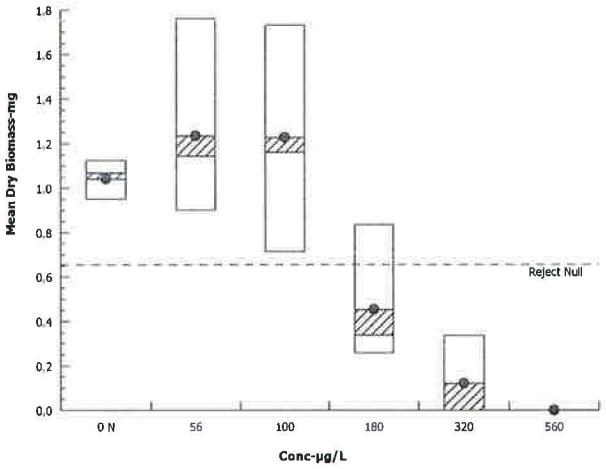
Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

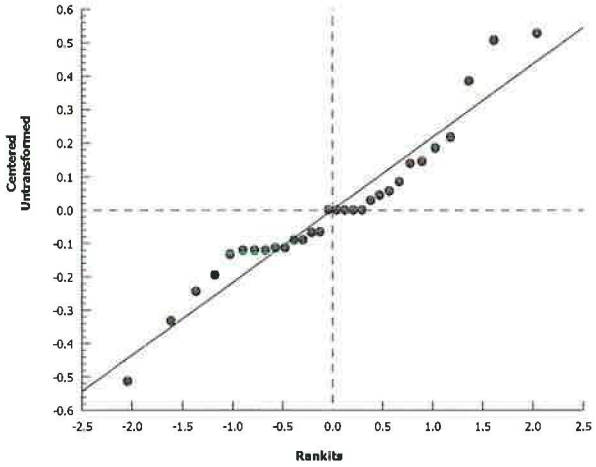
Analysis ID:	18-1823-8997	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:19	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.126	0.952	1.086	1.07	0.974
56		1.762	0.902	1.374	1.144	0.99
100		1.734	1.412	1.114	1.162	0.714
180		0.838	0.32	0.34	0.258	0.51
320		0.338	0	0.266	0	0
560		0	0	0	0	0

Graphics





Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	14-3204-3628	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	12-6347-5962	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:45	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	05 Sep-18 15:00	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-2190-9208	**Code:**	TOPS082918-25pp	**Client:**	Internal Lab
Sample Date:	29 Aug-18 15:45	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:	05 Sep-18 15:00	**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.96	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	66.56	8.72	118.7
EC10	77.12	49.21	125.6
EC15	87.68	56.66	132.2
EC20	98.24	62.75	139.9
EC25	108	66.67	146
EC40	136.8	78.67	174.6
EC50	156	109.5	201.5

7d Survival Rate Summary

			Calculated Variate(A/B)								
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	N	5	0.9600	0.8000	1.0000	0.0400	0.0894	9.32%	0.0%	24	25
56		5	0.9600	0.8000	1.0000	0.0400	0.0894	9.32%	0.0%	24	25
100		5	0.7600	0.4000	1.0000	0.1166	0.2608	34.31%	20.83%	19	25
180		5	0.3600	0.2000	0.6000	0.0748	0.1673	46.48%	62.5%	9	25
320		5	0.0800	0.0000	0.2000	0.0490	0.1095	136.90%	91.67%	2	25
560		5	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	25

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.8000	1.0000	1.0000
56		1.0000	0.8000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.8000	0.6000	0.4000
180		0.6000	0.4000	0.2000	0.2000	0.4000
320		0.2000	0.0000	0.2000	0.0000	0.0000
560		0.0000	0.0000	0.0000	0.0000	0.0000

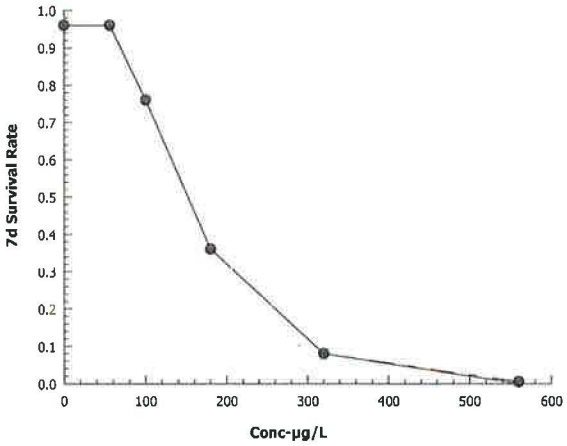
7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	4/5	5/5	5/5
56		5/5	4/5	5/5	5/5	5/5
100		5/5	5/5	4/5	3/5	2/5
180		3/5	2/5	1/5	1/5	2/5
320		1/5	0/5	1/5	0/5	0/5
560		0/5	0/5	0/5	0/5	0/5

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	14-3204-3628	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:18	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	02-4186-9715	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:19	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	12-6347-5962	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:45	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	05 Sep-18 15:00	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	02-2190-9208	**Code:**	TOPS082918-25pp	**Client:**	Internal Lab
Sample Date:	29 Aug-18 15:45	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:	05 Sep-18 15:00	**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1.042	0.85	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	106.5	48.68	109.5
IC10	113.1	64.22	119.1
IC15	119.6	79.34	129.9
IC20	126.1	92.5	139.8
IC25	132.7	102.9	150.9
IC40	152.3	128.8	181.9
IC50	165.4	144.9	213.4

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-µg/L	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**
0	N	5	1.042	0.952	1.126	0.03354	0.075	7.20%	0.0%
56		5	1.234	0.902	1.762	0.1543	0.3451	27.95%	-18.51%
100		5	1.227	0.714	1.734	0.169	0.378	30.80%	-17.82%
180		5	0.4532	0.258	0.838	0.1049	0.2345	51.74%	56.49%
320		5	0.1208	0	0.338	0.07485	0.1674	138.50%	88.4%
560		5	0	0	0	0	0		100.0%

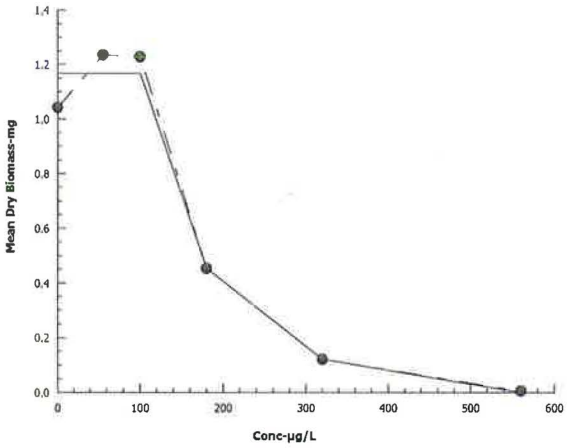
Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.126	0.952	1.086	1.07	0.974
56		1.762	0.902	1.374	1.144	0.99
100		1.734	1.412	1.114	1.162	0.714
180		0.838	0.32	0.34	0.258	0.51
320		0.338	0	0.266	0	0
560		0	0	0	0	0

Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	02-4186-9715	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	21 Sep-18 15:19	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Pacific Topsmelt 7-d Survival and Growth Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	12-6347-5962	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	29 Aug-18 15:45	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	05 Sep-18 15:00	**Species:**	Atherinops affinis	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	Aquatic Biosystems, CO	**Age:**	

Sample ID:	02-2190-9208	**Code:**	TOPS082918-25pp	**Client:**	Internal Lab
Sample Date:	29 Aug-18 15:45	**Material:**	Copper chloride	**Project:**	REF TOX
Receipt Date:	05 Sep-18 15:00	**Source:**	Reference Toxicant		
Sample Age:	n/a	**Station:**	REF TOX		

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	6.75	6.401	7.099	6.2	7.3	0.1476	0.4175	6.19%	0
56		8	6.662	6.273	7.052	6.1	7.4	0.1647	0.4658	6.99%	0
100		8	6.688	6.289	7.086	6.1	7.5	0.1684	0.4764	7.12%	0
180		8	6.625	6.199	7.051	6	7.5	0.18	0.5092	7.69%	0
320		8	6.65	6.24	7.06	6.1	7.5	0.1732	0.4899	7.37%	0
560		2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
Overall		42	6.667	6.528	6.805	6	7.5	0.06873	0.4454	6.68%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.675	7.601	7.749	7.6	7.8	0.03134	0.08864	1.16%	0
56		8	7.7	7.611	7.789	7.5	7.8	0.0378	0.1069	1.39%	0
100		8	7.713	7.618	7.807	7.5	7.8	0.03981	0.1126	1.46%	0
180		8	7.663	7.537	7.788	7.4	7.8	0.05324	0.1506	1.97%	0
320		8	7.7	7.582	7.818	7.4	7.8	0.05	0.1414	1.84%	0
560		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
Overall		42	7.695	7.659	7.732	7.4	7.8	0.01802	0.1168	1.52%	0 (0%)

Salinity-ppt

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	25	25	25	25	25	0	0	0.0%	0
56		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
180		8	25	25	25	25	25	0	0	0.0%	0
320		8	25	25	25	25	25	0	0	0.0%	0
560		2	25	25	25	25	25	0	0	0.0%	0
Overall		42	25	25	25	25	25	0	0	0.00%	0 (0%)

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	21	21	21	21	21	0	0	0.0%	0
56		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
180		8	21	21	21	21	21	0	0	0.0%	0
320		8	21	21	21	21	21	0	0	0.0%	0
560		2	21	21	21	21	21	0	0	0.0%	0
Overall		42	21	21	21	21	21	0	0	0.00%	0 (0%)

Pacific Topsmelt 7-d Survival and Growth Test									Aquatic Bioassay & Consulting Labs, Inc.
Dissolved Oxygen-mg/L									
Conc-µg/L	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	6.6	7.1	7.3	7.1	6.2	6.6	6.9	6.2
56		6.7	7.4	7.2	6.6	6.2	6.3	6.8	6.1
100		6.8	7.5	7.2	6.3	6.3	6.6	6.7	6.1
180		6.8	7.5	7.1	6.3	6	6.5	6.7	6.1
320		6.8	7.5	7.1	6.3	6.1	6.6	6.7	6.1
560		6.8	6.2						
pH-Units									
Conc-µg/L	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	7.6	7.6	7.7	7.6	7.7	7.8	7.6	7.8
56		7.8	7.6	7.7	7.7	7.7	7.8	7.5	7.8
100		7.8	7.6	7.7	7.7	7.8	7.8	7.5	7.8
180		7.8	7.6	7.7	7.7	7.8	7.8	7.4	7.5
320		7.8	7.6	7.7	7.7	7.8	7.8	7.4	7.8
560		7.8	7.8						
Salinity-ppt									
Conc-µg/L	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	25	25	25	25	25	25	25	25
56		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25
180		25	25	25	25	25	25	25	25
320		25	25	25	25	25	25	25	25
560		25	25						
Temperature-°C									
Conc-µg/L	**Code**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	N	21	21	21	21	21	21	21	21
56		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21
180		21	21	21	21	21	21	21	21
320		21	21	21	21	21	21	21	21
560		21	21						