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949.347.2780

November 16, 2017

Melissa You
City of Long Beach
333 West Ocean Boulevard, 9th Floor
Long Beach, California 90802

Re: Colorado Lagoon TMDL Monitoring Report for Summer 2017

Dear Ms. You,

Please find attached the Colorado Lagoon Total Maximum Daily Load (TMDL) Monitoring Report for summer 2017. Monitoring was conducted in accordance with the Colorado Lagoon TMDL Monitoring Plan and included water, sediment, and tissue. The report summarizes compliance monitoring results and the status of ongoing restoration activities.

Should there be any questions regarding the information provided in the quarterly monitoring report, please do not hesitate to contact us at (949) 347-2780.

Sincerely,

Steve Cappellino
Principal Scientist

Chris Osuch
Managing Scientist

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ANCHOR QEA

Memorandum

November 16, 2017

To: Melissa You, City of Long Beach

From: Steve Cappellino and Chris Osuch, Anchor QEA, LLC

cc: Alvin Papa, City of Long Beach; William Johnson, Los Angeles County Department of Public Works

Re: Colorado Lagoon TMDL Monitoring Report: Summer 2017

Introduction

Colorado Lagoon is a Y-shaped tidal lagoon located in Long Beach, California. It is connected to Alamitos Bay via an underground culvert. Colorado Lagoon was 303(d)-listed as an impaired waterbody by the Regional Water Quality Control Board (RWQCB) in 2006. The Los Angeles RWQCB adopted *Total Maximum Daily Load for Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs), Sediment Toxicity, Polycyclic Aromatic Hydrocarbons (PAHs), and Metals for Colorado Lagoon* (Colorado Lagoon Toxics TMDL) on October 1, 2009, and the TMDL went into effect on July 28, 2011. TMDL compliance monitoring is required quarterly (summer, fall, winter, and spring) as detailed in the Colorado Lagoon TMDL Monitoring Plan (CLTMP; Kinnetic 2011).

The CLTMP requires that sediment and tissue monitoring be performed annually (during the summer monitoring event) and that water quality monitoring be performed quarterly (until exceedances are not observed for four consecutive quarters). During Years 1 through 4, some contaminants of concern were elevated above numeric targets for water, sediment, and tissue. Based on these exceedances, water quality monitoring remains quarterly, and sediment and tissue monitoring frequency was increased to semi-annually. In summer 2017, TMDL monitoring included water, sediment, and fish tissue monitoring. Benthic community analysis was also performed to evaluate sediments using California's direct effects Sediment Quality Objectives (SQOs; SWRCB-Cal EPA 2009). Mussel tissue monitoring was not performed due to the inadequate number of mussels present because of recent in-water construction activities.

This memorandum summarizes the status of ongoing restoration activities and results of TMDL monitoring conducted on July 6, 11, and 13, 2017, to satisfy requirements for summer 2017 monitoring as stipulated in the CLTMP.

Status of Ongoing Restoration Program at Colorado Lagoon

Phase 2B of the Colorado Lagoon Restoration Program was completed in May 2017. In June 2017, a temporary fence was constructed along the trail to promote the public to refrain from leaving the

walking trail and venturing into the restoration area (Attachment A). Once the native plants are well established, this temporary fence will be removed. Plant maintenance and repair continued by the contractor through August 2017 and was turned over to the City of Long Beach (City) maintenance crews in September.

Phase 2A has entered the design and permitting phase. A 30% design was developed and unveiled to the City in March 2017. Separately, the City has completed and submitted a Coastal Development Permit application for the open channel and Bank Enabling Agreement documents to the U.S. Army Corps of Engineers to finalize the mitigation bank for the program.

Summer 2017 Monitoring Results

This section describes monitoring results for summer 2017 and includes field monitoring and sample collection, in situ water quality measurements, water chemistry, sediment chemistry, sediment toxicity, benthic community analysis, fish identification and observations, fish tissue chemistry, and quality assurance and quality control (QA/QC). Field monitoring and sample collection was conducted by Anchor QEA, LLC, and Tidal Influence. Toxicity testing and benthic community analysis were conducted by Aquatic Bioassay and Consulting Laboratories, Inc., located in Ventura, California. Chemical analyses were performed by Eurofins Calscience, Inc., located in Garden Grove, California.

Field Monitoring and Sample Collection

Field monitoring and sample collection were conducted in accordance with the CLTMP. An overview of monitoring activities and subsequent analyses is presented in Table 1. Sampling locations are shown in Figure 1, and field forms are included in Attachment B.

Water

In situ water quality measurements and water samples were collected from three stations within Colorado Lagoon and one station in Marine Stadium (Figure 1). Samples were analyzed for chemical contaminants of concern.

In Situ Water Quality Measurements

In situ water quality measurements included pH, dissolved oxygen (DO), temperature, salinity, and conductivity. Parameters were measured at the surface and at 1-meter increments through the water column with the last measurement taken just above the sediment surface. Results of in situ water quality measurements are presented in Table 2.

Water quality values were similar among the four stations with minimal variance between depths. DO ranged from 6.0 to 6.4 milligrams per liter, and pH ranged from 7.0 to 7.7. Temperature ranged from 25.0 to 26.7 °C. Salinity ranged from 34.2 to 34.8 parts per thousand, and conductivity ranged from 52,058 to 52,850 microsiemens per centimeter.

Water Chemistry

Surface water samples were collected and analyzed for total suspended solids, ammonia, total Kjeldahl nitrogen, nitrate, total phosphorus, orthophosphate phosphorus, metals (total and dissolved), organochlorine pesticides (including DDTs, chlordane, and dieldrin), PCBs, and PAHs. The CLTMP requires measured concentrations for lead (dissolved), zinc (dissolved), dieldrin, total DDTs, total chlordanes, total PCBs, and total PAHs be compared to California Toxics Rule (CTR) water quality numeric targets as defined in Table 1 of the CLTMP (Kinnetic 2011). Results of water chemical analyses are presented in Table 3. Chemistry laboratory reports are provided in Attachment C.

Dissolved lead ranged from 0.118 to 0.318 micrograms per liter (µg/L). Dissolved zinc ranged from 2.41 to 5.03 µg/L. All lead and zinc concentrations were less than CTR water quality numeric targets. DDTs, dieldrin, chlordanes, PCBs, and PAHs were not detected in water samples.

Sediment

Surface sediment samples were collected from the four stations coinciding with water monitoring (Figure 1). Samples were analyzed for chemical contaminants of concern, sediment toxicity, and benthic community condition. Sediment quality was assessed using California's direct effects SQOs as described in the *Final Staff Report, Water Quality Control Plan for Enclosed Bays and Estuaries, Part 1 – Sediment Quality* (SWRCB-Cal EPA 2008), and in Bay et al. 2014. The SQOs are based on a multiple lines of evidence (MLOE) approach. The MLOE results were integrated through the evaluation of the severity of biological effects and the potential for chemically mediated effects to provide a final station level assessment.

Sediment Chemistry

Sediment samples were analyzed for total solids, grain size, total organic carbon, metals, organochlorine pesticides (including DDTs, chlordane, and dieldrin), PCBs, and PAHs. The CLTMP requires sediment concentrations for lead, zinc, dieldrin, total DDTs, total chlordanes, total PCBs, and total PAHs be compared to effects range low (ERL) sediment numeric targets as defined in Table 1 of the CLTMP (Kinnetic 2011). Results of sediment chemical analyses are presented in Table 4. Chemistry laboratory reports are provided in Attachment C.

Chemicals detected in sediment samples included metals, chlordanes, PAHs, and PCBs. Within Marine Stadium (Station WS4), lead, zinc, total chlordane, and total PCBs exceeded corresponding ERL numeric targets. Within Colorado Lagoon, zinc (Station WS1) and total chlordane (Stations WS1 and WS3) exceeded corresponding ERL numeric targets. PAHs, DDTs, and dieldrin were less than corresponding ERL numeric targets at all stations.

Sediment Toxicity

Sediment toxicity was assessed using two standard tests: the 10-day amphipod test using *Eohaustorius estuarius* and the sediment-water interface (SWI) test using *Mytilus galloprovincialis.* Laboratory controls were tested concurrently with sediments collected at the four stations, and test sediment results were compared to their respective laboratory control. Results of sediment toxicological analyses are presented in Table 5. The toxicology laboratory report is included as Attachment D.

Test acceptability was assessed by laboratory control performance. Control survival in the amphipod test was 99%, and control mean percent normal development in the SWI test was 97.1%. Both tests met control acceptability criteria. Amphipod survival in test sediments ranged from 98 to 99%. Mean percent normal development in the SWI test ranged from 96.7 to 97.9%. For both tests, no statistical differences were observed when compared to the laboratory controls.

Benthic Community Analysis

Sediment samples were sieved through a 1.0-millimeter stainless steel mesh, and recovered organisms were submitted for identification and enumeration to the lowest possible taxonomic level. Results for each station are provided in Table 6. A full list of benthic species identified for each station is provided in the laboratory report (Appendix E).

Total abundance ranged from 370 to 1,082 individuals per station. The dominant species was the mussel *Musculista senhousia* (544 individuals and 19% of the benthic community). Richness ranged from 24 to 48 species per station. Highest abundance and species richness were observed at Station WS4 (Marine Stadium). This is not unexpected because Phase 2B hydraulic dredging and placement activities in Colorado Lagoon recently completed in March 2017, and all stations were located within fill areas. Additional time is required for the benthic community to recover at these stations. Station composition of sensitive taxa ranged from 4.17 to 9.38%. The highest number of sensitive taxa were observed at Station WS1.

Sediment Quality Objectives Direct Effects Assessment

Sediment quality was assessed using California's SQOs (SWRCB-Cal EPA 2009). SQOs are based on an MLOE approach, including sediment chemistry, sediment toxicity, and benthic community condition. The sediment chemistry line of evidence (LOE) evaluation is presented in Table 7. Category scores for stations in Colorado Lagoon (WS1, WS2, and WS3) were low to moderate exposure, while the station in Marine Stadium (WS4) was high exposure. The sediment toxicity LOE evaluation is presented in Table 8. All four stations were nontoxic. The benthic community LOE evaluation is presented in Table 9. All four stations showed moderate disturbance. The severity of biological effects (i.e., integration of toxicity LOE and benthic condition LOE categories) and the potential for chemically mediated effects (i.e., the integration of the toxicity LOE and chemistry LOE categories) were used to determine the station level assessment. Integrated station assessment results are

provided in Table 10 and Figure 2. Within Colorado Lagoon, Station WS1 was found to be possibly impacted and Stations WS2 and WS3 were found to be likely unimpacted. Station WS4 (within Marine Stadium) was found to be likely impacted. No stations were found to be clearly impacted.

Tissue

Fish were collected from four stations (Figure 1) and then identified, enumerated, measured (length), and visually inspected for anomalies. Whole topsmelt (*Atherinops affinis*) were collected from each of the four stations for subsequent chemical analyses of tissue. Based on historical data, topsmelt are the most abundant resident fish species throughout the year (Allen and Horn 1975; Chambers Group 2004) and the primary candidate for fish tissue monitoring identified in the CLTMP (Kinnetic 2011). Consistent with historical data, topsmelt was the only species sufficient in size and abundance for analysis. Fish collected from three of the stations (F1A, F1B, and F1C) were composited to form one sample for chemical analyses. Fish tissue from the remaining station (F2) was analyzed separately. As previously described, mussel tissue monitoring was not performed due to inadequate numbers of mussels present.

Fish Identification, Enumeration, Lengths, and Visual Inspections

A summary of results is presented in Table 11. Six species were identified in beach seine samples. The most abundant species was Topsmelt (304 individuals). The majority of topsmelt were measured in the 4- and 5-centimeter size classes. Abundance of other fish species were low, ranging from 1 (California halfbeak and Bay pipefish) to 86 (Northern anchovy) individuals. No anomalies were noted on any fish at any station.

These results are not unexpected, as topsmelt were targeted for this investigation because of the length and mesh size of the net. Hence, these results do not represent the community composition of fish in Colorado Lagoon and Marine Stadium. However, historically, topsmelt have been shown to be the most abundant species in Colorado Lagoon (Allen and Horn 1975; Chambers Group 2004).

Fish Tissue Chemistry

Whole fish tissue samples (from topsmelt) were analyzed for percent lipids, metals, organochlorine pesticides (including DDTs, chlordane, and dieldrin), PCBs, and PAHs. The CLTMP requires tissue concentrations for dieldrin, total DDTs, total chlordanes, total PCBs, and total PAHs to be compared to the fish tissue targets (i.e., Office of Environmental Health Hazard Assessment [OEHHA] Fish Contaminant Goals [FCGs] for cancer risk) as defined in Table 1 of the CLTMP.[1] In addition, fish tissue concentrations were compared to OEHHA FCGs for non-cancer risk. Results of fish tissue chemical

[1] Fish tissue targets for total chlordane, total DDTs, dieldrin, and total PCBs are the OEHHA FCGs for cancer risk. The fish tissue target for total PAHs is the U.S. Environmental Protection Agency screening value.

analyses are presented in Table 12. A summary of individuals used to create composites for analyses is provided in Table 13. Chemistry laboratory reports are provided in Attachment C.

Chemicals detected in fish tissue included PAHs, DDTs, chlordanes, and PCBs. Phenanthrene was the only PAH detected (F1 composite), at an estimated concentration between the method detection limit and reporting limit. Total PAHs were less than the fish tissue target. Total DDTs exceeded the fish tissue target at Station F2 (Marine Stadium), and total chlordane exceeded the fish tissue target at both stations. Total PCBs exceeded the fish tissue target at both stations.

Quality Assurance/Quality Control

Water, Sediment, and Tissue Chemistry

A review of analytical results for water, sediment, and tissue chemistry was conducted to evaluate the laboratory's performance in meeting QA/QC guidelines outlined in the CLTMP. Data validation reports are included in Attachment F. Results of this assessment concluded that most data are acceptable as reported or qualified; however, one result was rejected. Dieldrin did not recover in the matrix spike or matrix spike duplicate on sample F2-170711 and was not detected in the sample, so the result was rejected. Although one result was rejected, the data quality objective for completeness identified in the CLTMP was met.

Sediment Toxicity

A review of toxicity testing results was conducted to evaluate the laboratory's performance in meeting QA/QC guidelines outlined in the CLTMP (Kinnetic 2011). All test organism responses within the negative (laboratory) controls met acceptability criteria. All reference toxicant test median lethal concentration (LC_{50}) and median effective concentration (EC_{50}) values were within two standard deviations of the laboratory mean, indicating that sensitivity of test organisms was normal.

Benthic Community Analysis

Station WS3 was selected for a taxonomic QC assessment, which included re-identification of this sample, a comparison to the original dataset, resolution of non-matching species identifications and/or counts, and calculation of the four Southern California Bight Regional Monitoring QC efficiency equations. The four criteria assessed included taxa richness accuracy, abundancy accuracy, taxonomic accuracy, and identified taxa accuracy. The taxonomic QC report is presented in the benthic community laboratory report in Attachment E. All criteria met the target of 90%, except abundance accuracy (83.9%) due to data entry errors. The dataset was resolved and without these errors, abundance accuracy was 99%.

Deviations from the Colorado Lagoon TMDL Monitoring Plan

No deviations from the CLTMP occurred during the spring 2017 monitoring event. Some of the analytical methods used by the laboratory differed from those suggested in the CLTMP; however, all methods used are promulgated and U.S. Environmental Protection Agency-approved methods and therefore deemed comparable and acceptable for these analyses. As previously described, mussel tissue monitoring was not performed due to inadequate numbers of mussels present because of recent in-water construction activities

Summary

Summer 2017 TMDL monitoring included water, sediment, and fish tissue monitoring. Chemistry results were compared to numeric targets as defined in Table 1 of the CLTMP (Kinnetic 2011). A summary of TMDL numeric target exceedances is presented in Table 14. Sediment quality was also assessed using California's SQOs (SWRCB-Cal EPA 2009). A summary of monitoring results for summer 2017 is presented as follows:

- Water: No contaminants exceeded TMDL numeric targets. It should be noted that there have been no exceedances of TMDL numerical targets within Colorado Lagoon for the past five monitoring events.
- Sediment: Zinc and total chlordane exceeded the TMDL numeric target in Colorado Lagoon. Based on the California SQO analysis, final station assessments within Colorado Lagoon were likely unimpacted (Stations WS2 and WS3) or possibly impacted (Station WS1). It should be noted that the benthic community is still recovering from recent Phase 2B dredging and fill activities.
- Fish tissue: Total chlordane and PCBs exceeded the TMDL numeric target in Colorado Lagoon. It should be noted that these mobile fish were found at higher concentrations in Marina Stadium.

Future Monitoring Events

The fall monitoring event is tentatively scheduled for November 28, 2017.

References

Allen, L.G. and M.H. Horn, 1975. "Abundance, Diversity, and Seasonality of Fishes in Colorado Lagoon, Alamitos Bay, California." *Estuarine and Coastal Marine Science* 3(3):371–380.

Bay, S.M., D.J. Greenstein, J.A. Ranasinghe, D.W. Diehl, and A.E. Fetscher, 2014. *Sediment Quality Assessment Technical Support Manual*. Technical Report 777. Southern California Coastal Water Research Project. January 2014.

Chambers Group (Chambers Group, Inc.), 2004. *Habitat Assessment for the Colorado Lagoon Restoration Feasibility Study for the City of Long Beach*. Prepared for Moffat & Nichol. July 2004.

Kinnetic (Kinnetic Laboratories, Inc., and Moffatt & Nichol), 2011. *Colorado Lagoon TMDL Monitoring Plan*. Order No. R8-2011-0050. Prepared for the City of Long Beach. Issued October 28, 2011.

SWRCB-Cal EPA (State Water Resources Control Board), 2008. *Final Staff Report, Water Quality Control Plan for Enclosed Bays and Estuaries, Part 1 – Sediment Quality*. September 16, 2008.

SWRCB-Cal EPA, 2009. *Water Quality Control Plan for Enclosed Bay and Estuaries- Part 1 Sediment Quality.* August 25, 2009.

Tables

Table 1
Water, Sediment, and Tissue Sample Collection and Testing Strategy

Station ID	Location	In Situ Water Quality Measurements	Chemistry	Sediment Toxicology	Benthic Community	Fish Identification and Enumeration
Water and Sediment						
WS1	Outfall Subbasin A	Yes	Yes	Yes	Yes	NA
WS2	Outfall Subbasin B	Yes	Yes	Yes	Yes	NA
WS3	Outfall Subbasin C	Yes	Yes	Yes	Yes	NA
WS4	Marine Stadium Outlet	Yes	Yes	Yes	Yes	NA
Fish						
F1A	Western Arm	NA	Yes[1]	NA	NA	Yes
F1B	Central Arm	NA		NA	NA	Yes
F1C	Northern Arm	NA		NA	NA	Yes
F2	Marine Stadium	NA	Yes	NA	NA	Yes

Notes:

1. Per the Colorado Lagoon TMDL Monitoring Plan, samples from F1A, F1B, and F1C were composited and analyzed as one sample. F2 was analyzed as a separate sample.

NA: not applicable

Table 2
Water Quality Monitoring Results

Date	Station ID	Latitude (decimal degrees)	Longitude (decimal degrees)	Sampling Depth (meters)	pH	DO (mg/L)	Temperature (°C)	Salinity (ppt)	Conductivity (µS/cm)
7/13/2017	WS1	33.77257	-118.13634	0	7.4	6.3	26.0	34.7	52,658
7/13/2017	WS1	33.77257	-118.13634	1	7.3	6.2	25.9	34.8	52,820
7/13/2017	WS2	33.77318	-118.13250	0	7.7	6.2	26.7	34.2	52,058
7/13/2017	WS2	33.77318	-118.13250	1	7.6	6.3	26.5	34.7	52,683
7/13/2017	WS3	33.77165	-118.13219	0	7.7	6.4	25.9	34.8	52,807
7/13/2017	WS3	33.77165	-118.13219	1	7.6	6.4	25.9	34.8	52,850
7/13/2017	WS4	33.76793	-118.12945	0	7.0	6.0	25.0	34.8	52,768
7/13/2017	WS4	33.76793	-118.12945	1	7.0	6.0	25.0	34.8	52,792
7/13/2017	WS4	33.76793	-118.12945	2	7.0	6.0	25.0	34.7	52,768

Notes:
µS/cm: microsiemens per centimeter
DO: dissolved oxygen
mg/L: milligrams per liter
ppt: parts per thousand

Table 3
Water Chemistry Results

	Sample ID Sample Date	WS1-SW-170713 7/13/2017	WS2-SW-170713 7/13/2017	WS3-SW-170713 7/13/2017	WS4-SW-170713 7/13/2017
	CTR Criteria				
Conventional Parameters (mg/L)					
Ammonia as nitrogen	--	**0.027 J**	**0.023 J**	**0.026 J**	**0.025 J**
Nitrate as nitrogen	--	0.029 U	**0.046 J**	0.029 U	**0.036 J**
Nitrogen (Total Kjeldahl) as nitrogen	--	**0.35 J**	**0.34 J**	**0.32 J**	**0.29 J**
Phosphate (orthophosphate)	--	0.017 U	**0.022 J**	0.017 U	0.017 U
Phosphorus	--	**0.022 J**	**0.064**	0.02 U	0.02 U
Total suspended solids	--	**3.7**	**7.7**	**3.5**	0.83 U
Metals (µg/L)					
Lead	--	**0.28**	**0.388**	**0.233**	**0.213**
Zinc	--	**3.18 J**	**3.19 J**	**3.68 J**	**4.44 J**
Metals, Dissolved (µg/L)					
Lead	8.1	**0.17**	**0.318**	**0.118**	**0.118**
Zinc	81	**4.05**	**2.71**	**2.41**	**5.03**
Polycyclic Aromatic Hydrocarbons (µg/L)					
Acenaphthylene	--	0.018 U	0.018 U	0.018 U	0.018 U
Anthracene	--	0.034 U	0.034 U	0.034 U	0.034 U
Benzo(a)anthracene	--	0.024 U	0.024 U	0.024 U	0.024 U
Benzo(a)pyrene	--	0.036 U	0.036 U	0.036 U	0.036 U
Benzo(b)fluoranthene	--	0.025 U	0.025 U	0.025 U	0.025 U
Benzo(g,h,i)perylene	--	0.022 U	0.022 U	0.022 U	0.022 U
Benzo(k)fluoranthene	--	0.023 U	0.023 U	0.023 U	0.023 U
Chrysene	--	0.019 U	0.019 U	0.019 U	0.019 U
Dibenzo(a,h)anthracene	--	0.027 U	0.027 U	0.027 U	0.027 U
Fluorene	--	0.024 U	0.024 U	0.024 U	0.024 U
Indeno(1,2,3-c,d)pyrene	--	0.022 U	0.022 U	0.022 U	0.022 U
Phenanthrene	--	0.031 U	0.031 U	0.031 U	0.031 U
Pyrene	--	0.025 U	0.025 U	0.025 U	0.025 U
Total HPAH (8 of 12) (U= 0)	--	0.036 U	0.036 U	0.036 U	0.036 U
Total LPAH (4 of 12) (U = 0)	--	0.034 U	0.034 U	0.034 U	0.034 U
Total PAH (12) (U = 0)	0.049	0.036 U	0.036 U	0.036 U	0.036 U
Pesticides (µg/L)					
2,4'-DDD (o,p'-DDD)	--	0.00046 U	0.00046 U	0.00046 U	0.00046 U
2,4'-DDE (o,p'-DDE)	--	0.00048 U	0.00048 U	0.00048 U	0.00048 U

Table 3
Water Chemistry Results

	Sample ID Sample Date	WS1-SW-170713 7/13/2017	WS2-SW-170713 7/13/2017	WS3-SW-170713 7/13/2017	WS4-SW-170713 7/13/2017
	CTR Criteria				
2,4'-DDT (o,p'-DDT)	--	0.00059 U	0.00059 U	0.00059 U	0.00059 U
4,4'-DDD (p,p'-DDD)	--	0.00049 U	0.00049 U	0.00049 U	0.00049 U
4,4'-DDE (p,p'-DDE)	--	0.00073 U	0.00073 U	0.00073 U	0.00073 U
4,4'-DDT (p,p'-DDT)	--	0.00084 U	0.00084 UJ	0.00084 U	0.00084 U
Chlordane, alpha- (Chlordane, cis-)	--	0.00046 U	0.00046 U	0.00046 U	0.00046 U
Chlordane, gamma- (Chlordane, trans-)	--	0.00065 U	0.00065 U	0.00065 U	0.00065 U
Dieldrin	0.00014	*0.00056 U*	*0.00056 U*	*0.00056 U*	*0.00056 U*
Heptachlor	--	0.00074 U	0.00074 U	0.00074 U	0.00074 U
Heptachlor epoxide	--	0.00052 U	0.00052 U	0.00052 U	0.00052 U
Nonachlor, cis-	--	0.00055 U	0.00055 U	0.00055 U	0.00055 U
Nonachlor, trans-	--	0.00059 U	0.00059 U	0.00059 U	0.00059 U
Oxychlordane	--	0.00053 U	0.00053 U	0.00053 U	0.00053 U
Total Chlordane (U = 0)	0.00059	*0.00074 U*	*0.00074 U*	*0.00074 U*	*0.00074 U*
Total DDx (U = 0)	0.00059	*0.00084 U*	*0.00084 UJ*	*0.00084 U*	*0.00084 U*
PCB Congeners - Low Resolution (µg/L)					
PCB-018	--	0.00044 U	0.00044 U	0.00044 U	0.00044 U
PCB-028	--	0.00051 U	0.00051 U	0.00051 U	0.0005 U
PCB-037	--	0.00029 U	0.00029 U	0.00029 U	0.00029 U
PCB-044	--	0.00068 U	0.00068 U	0.00068 U	0.00068 U
PCB-049	--	0.00051 U	0.00051 U	0.00051 U	0.0005 U
PCB-052	--	0.00053 U	0.00053 U	0.00053 U	0.00053 U
PCB-066	--	0.00039 U	0.00039 U	0.00039 U	0.00038 U
PCB-070	--	0.0004 U	0.0004 U	0.0004 U	0.00039 U
PCB-074	--	0.00047 U	0.00047 U	0.00047 U	0.00046 U
PCB-077	--	0.0006 U	0.0006 U	0.0006 U	0.00059 U
PCB-081	--	0.00047 U	0.00047 U	0.00047 U	0.00046 U
PCB-087	--	0.00068 U	0.00068 U	0.00068 U	0.00068 U
PCB-099	--	0.00059 U	0.00059 U	0.00059 U	0.00058 U
PCB-101	--	0.00048 U	0.00048 U	0.00048 U	0.00047 U
PCB-105	--	0.00045 U	0.00045 U	0.00045 U	0.00044 U
PCB-110	--	0.00032 U	0.00032 U	0.00032 U	0.00032 U
PCB-114	--	0.00045 U	0.00045 U	0.00045 U	0.00044 U
PCB-118	--	0.00048 U	0.00048 U	0.00048 U	0.00048 U

Table 3
Water Chemistry Results

	Sample ID Sample Date	WS1-SW-170713 7/13/2017	WS2-SW-170713 7/13/2017	WS3-SW-170713 7/13/2017	WS4-SW-170713 7/13/2017
	CTR Criteria				
PCB-119	--	0.00017 U	0.00017 U	0.00017 U	0.00016 U
PCB-123	--	0.0008 U	0.0008 U	0.0008 U	0.00079 U
PCB-126	--	0.00024 U	0.00024 U	0.00024 U	0.00024 U
PCB-128	--	0.00042 U	0.00042 U	0.00042 U	0.00041 U
PCB-132/153	--	0.00067 U	0.00067 U	0.00067 U	0.00066 U
PCB-138/158	--	0.00057 U	0.00057 U	0.00057 U	0.00057 U
PCB-149	--	0.00022 U	0.00022 U	0.00022 U	0.00022 U
PCB-151	--	0.00039 U	0.00039 U	0.00039 U	0.00039 U
PCB-156	--	0.00039 U	0.00039 U	0.00039 U	0.00038 U
PCB-157	--	0.00039 U	0.00039 U	0.00039 U	0.00039 U
PCB-167	--	0.00078 U	0.00078 U	0.00078 U	0.00077 U
PCB-168	--	0.0005 U	0.0005 U	0.0005 U	0.00049 U
PCB-169	--	0.00039 U	0.00039 U	0.00039 U	0.00038 U
PCB-170	--	0.00041 U	0.00041 U	0.00041 U	0.0004 U
PCB-177	--	0.00027 U	0.00027 U	0.00027 U	0.00026 U
PCB-180	--	0.00058 U	0.00058 U	0.00058 U	0.00057 U
PCB-183	--	0.0005 U	0.0005 U	0.0005 U	0.0005 U
PCB-187	--	0.00041 U	0.00041 U	0.00041 U	0.00041 U
PCB-189	--	0.00047 U	0.00047 U	0.00047 U	0.00046 U
PCB-194	--	0.00024 U	0.00024 U	0.00024 U	0.00024 U
PCB-201	--	0.00045 U	0.00045 U	0.00045 U	0.00045 U
PCB-206	--	0.00041 U	0.00041 U	0.00041 U	0.00041 U
Total PCB Congener - low resolution (U = 0)	0.00017	*0.0008 U*	*0.0008 U*	*0.0008 U*	*0.00079 U*

Table 3
Water Chemistry Results

Notes:
All non-detect results are reported at the method detection limit.
Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest limit value is reported as the sum.
U.S. Environmental Protection Agency Stage 2A data validation was completed by Anchor QEA.
Gamma chlordane and trans-chlordane are synonymous and refer to CAS RN 5103-74-2.
Total chlordane is the sum of cis-chlordane, trans-chlordane, heptachlor, heptachlor epoxide, cis-nonachlor, trans-nonachlor, and oxychlordane.
Total DDx is the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT.
Total HPAH (8 of 12) is the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total LPAH (4 of 12) is the sum of acenaphthylene, anthracene, fluorene, and phenanthrene.
Total PAH is the total of acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene.
Total PCB congeners is the sum of all PCB congeners listed in this table.
Italicized: non-detected concentration is above one or more identified screening levels
Bold: detected result
µg/L: micrograms per liter
HPAH: high-molecular-weight polycyclic aromatic hydrocarbon
J: estimated value
LPAH: low-molecular-weight polycyclic aromatic hydrocarbon
mg/L: milligrams per liter
PAH: polycyclic aromatic hydrocarbon
PCB: polychlorinated biphenyl
U: compound analyzed but not detected above detection limit
UJ: compound analyzed but not detected above estimated detection limit

Table 4
Sediment Chemistry Results

	Sample ID Sample Date	WS1-SS-170706 7/6/2017	WS2-SS-170706 7/6/2017	WS3-SS-170706 7/6/2017	WS4-SS-170706 7/6/2017
	ERL Numeric Target				
Conventional Parameters (pct)					
Total organic carbon	--	**1.9**	**0.49**	**1.1**	**3.5**
Total solids	--	**39.3**	**56.8**	**44.5**	**40.3**
Grain Size (pct)					
Gravel (greater than 2 mm)	--	0.01 U	0.01 U	0.01 U	0.01 U
Sand, very coarse (1 to 2 mm)	--	0.01 U	0.01 U	0.01 U	**5.24**
Sand, coarse (0.5 to 1 mm)	--	0.01 U	0.01 U	0.01 U	**10.3**
Sand, medium (0.25 to 0.5 mm)	--	**0.22**	**0.01**	0.01 U	**13.8**
Sand, fine (0.125 to 0.25 mm)	--	**10.7**	**8.01**	**3.67**	**24.1**
Sand, very fine (0.0625 to 0.125 mm)	--	**9.73**	**19**	**7.57**	**13.9**
Silt (0.00391 to 0.0625 mm)	--	**64.72**	**61.09**	**71.53**	**28.3**
Clay (less than 0.00391 mm)	--	**14.62**	**11.9**	**17.23**	**4.35**
Metals (mg/kg)					
Cadmium	--	**0.551**	**0.281**	**0.368**	**0.753**
Copper	--	**47.8**	**38.7**	**36.9**	**93.7**
Lead	46.7	**35.1**	**17**	**18.7**	**77.4**
Mercury	--	**0.0982**	**0.0299 J**	**0.0639**	**0.0816**
Zinc	150	**179 J**	**102 J**	**109 J**	**385 J**
Polycyclic Aromatic Hydrocarbons (µg/kg)					
1-Methylnaphthalene	--	5.9 U	4 U	5.2 U	5.7 U
1-Methylphenanthrene	--	6.3 U	4.3 U	5.5 U	6.1 U
2,6-Dimethylnaphthalene	--	**43**	**3.5 J**	**5.9 J**	**35**
2-Methylnaphthalene	--	5.9 U	4 U	5.2 U	**10 J**
Acenaphthene	--	5.9 U	4.1 U	5.2 U	5.8 U
Acenaphthylene	--	4.5 U	3.1 U	4 U	4.4 U
Anthracene	--	8.8 U	6 U	7.7 U	**21 J**
Benzo(a)anthracene	--	**18 J**	**4.4 J**	**6.9 J**	**79**
Benzo(a)pyrene	--	**16 J**	**4.5 J**	**7.6 J**	**74**
Benzo(b)fluoranthene	--	**32 J**	**7.1 J**	**11 J**	**130**
Benzo(e)pyrene	--	**33**	**6.3 J**	**11 J**	**120**
Benzo(g,h,i)perylene	--	**36**	**8.5 J**	**7.5 J**	**63**
Benzo(k)fluoranthene	--	**18 J**	4.8 U	**6.9 J**	**95**
Biphenyl (1,1'-Biphenyl)	--	4.7 U	3.2 U	4.2 U	4.6 U
Chrysene	--	**43 J**	**7.9 J**	**14 J**	**210**

Table 4
Sediment Chemistry Results

	Sample ID Sample Date	WS1-SS-170706 7/6/2017	WS2-SS-170706 7/6/2017	WS3-SS-170706 7/6/2017	WS4-SS-170706 7/6/2017
	ERL Numeric Target				
Dibenzo(a,h)anthracene	--	**8.1 J**	3.4 U	4.3 U	**26**
Fluoranthene	--	**58 J**	**7.7 J**	**21 J**	**310**
Fluorene	--	**11 J**	5.4 U	7 U	**16 J**
Indeno(1,2,3-c,d)pyrene	--	**16 J**	**5.3 J**	**4.7 J**	**46**
Naphthalene	--	8.7 U	6 U	7.7 U	**10 J**
Perylene	--	**28**	4.1 U	**20 J**	**34**
Phenanthrene	--	**24 J**	**3.9 J**	**14 J**	**93**
Pyrene	--	**65 J**	**9 J**	**25**	**290**
Total HPAH (8 of 12) (U= 0)	1,700	**252.1 J**	**46.7 J**	**83.6 J**	**1013**
Total HPAH (8 of 18) (U = 0) for SQO	--	**269.1 J**	**39.8 J**	**105.5 J**	**1143**
Total LPAH (4 of 12) (U = 0)	552	**35 J**	**3.9 J**	**14 J**	**130 J**
Total LPAH (10 of 18) (U = 0) for SQO	--	**78 J**	**7.4 J**	**19.9 J**	**185 J**
Total PAH (12) (U = 0)	4,022	**287.1 J**	**50.6 J**	**97.6 J**	**1143 J**
Pesticides (µg/kg)					
2,4'-DDD (o,p'-DDD)	--	0.19 U	0.13 U	0.17 U	0.19 U
2,4'-DDE (o,p'-DDE)	--	0.089 U	0.061 U	0.078 U	0.086 U
2,4'-DDT (o,p'-DDT)	--	0.16 U	0.11 U	0.14 U	0.15 U
4,4'-DDD (p,p'-DDD)	--	0.1 UJ	0.069 U	0.089 U	0.098 U
4,4'-DDE (p,p'-DDE)	--	0.1 U	0.07 U	0.09 U	0.099 U
4,4'-DDT (p,p'-DDT)	--	0.13 UJ	0.091 U	0.12 U	0.13 U
Chlordane, alpha- (Chlordane, cis-)	--	**2.3 J**	0.12 U	**0.96**	**15**
Chlordane, gamma- (Chlordane, trans-)	--	**2.6 J**	0.093 U	**0.94**	**11**
Dieldrin	0.02	*0.27 UJ*	*0.18 U*	*0.24 U*	*0.26 U*
Heptachlor	--	0.13 U	0.089 U	0.11 U	0.13 U
Heptachlor epoxide	--	0.11 U	0.077 U	0.099 U	0.11 U
Nonachlor, cis-	--	**1.1**	0.088 U	**0.54**	**3.6**
Nonachlor, trans-	--	**1.9**	0.075 U	**0.79**	**11**
Oxychlordane	--	0.18 U	0.13 U	0.16 U	0.18 U
Sum DDD (U = 0) for SQO	--	0.50 UJ	0.35 U	0.44 U	0.49 U
Sum DDE (U = 0) for SQO	--	0.50 U	0.35 U	0.44 U	0.49 U
Sum DDT (U = 0) for SQO	--	0.50 UJ	0.35 U	0.44 U	0.49 U
Total Chlordane (Colorado Lagoon) (U = 0)	0.5	**7.9 J**	0.13 U	**3.23**	**40.6**
Total DDx (U = 0)	1.58	0.19 UJ	0.13 U	0.17 U	0.19 U

Table 4
Sediment Chemistry Results

	Sample ID Sample Date	WS1-SS-170706 7/6/2017	WS2-SS-170706 7/6/2017	WS3-SS-170706 7/6/2017	WS4-SS-170706 7/6/2017
	ERL Numeric Target				
PCB Congeners - Low Resolution (µg/kg)					
PCB-005/008	--	0.2 U	0.13 U	0.17 U	0.19 U
PCB-018	--	0.17 U	0.11 U	0.15 U	0.16 U
PCB-028	--	0.18 U	0.12 U	0.16 U	0.17 U
PCB-037	--	0.15 U	0.11 U	0.14 U	0.15 U
PCB-044	--	0.39 U	0.27 U	0.34 U	0.37 U
PCB-049	--	0.13 U	0.087 U	0.11 U	0.12 U
PCB-052	--	0.48 U	0.33 U	0.43 U	0.47 U
PCB-066	--	0.31 U	0.22 U	0.28 U	**1.2**
PCB-070	--	0.18 U	0.13 U	0.16 U	**1.6**
PCB-074	--	0.23 U	0.16 U	0.2 U	0.22 U
PCB-077	--	0.29 U	0.2 U	0.26 U	0.28 U
PCB-081	--	0.23 U	0.16 U	0.2 U	0.22 U
PCB-087	--	0.28 U	0.2 U	0.25 U	0.27 U
PCB-099	--	0.12 U	0.083 U	0.11 U	**2.6**
PCB-101	--	0.11 U	0.078 U	0.099 U	**2.9**
PCB-105	--	0.14 U	0.094 U	0.12 U	0.13 U
PCB-110	--	0.086 U	0.059 U	0.076 U	**4.5**
PCB-114	--	0.19 U	0.13 U	0.17 U	0.18 U
PCB-118	--	0.088 U	0.061 U	0.077 U	**5.8**
PCB-119	--	0.16 U	0.11 U	0.14 U	0.15 U
PCB-123	--	0.19 U	0.13 U	0.16 U	0.18 U
PCB-126	--	0.14 U	0.096 U	0.12 U	0.13 U
PCB-128	--	0.31 U	0.21 U	0.27 U	0.29 U
PCB-132/153	--	**1.2**	0.28 U	0.36 U	**7.9**
PCB-138/158	--	0.9 U	0.62 U	0.79 U	**6.7**
PCB-149	--	0.3 U	0.21 U	0.26 U	**3.4**
PCB-151	--	0.22 U	0.15 U	0.2 U	0.22 U
PCB-156	--	0.2 U	0.14 U	0.17 U	0.19 U
PCB-157	--	0.22 U	0.15 U	0.19 U	0.21 U
PCB-167	--	0.34 U	0.23 U	0.3 U	0.33 U
PCB-168	--	0.36 U	0.25 U	0.32 U	0.35 U
PCB-169	--	0.17 U	0.11 U	0.15 U	0.16 U
PCB-170	--	0.28 U	0.19 U	0.25 U	0.27 U

Table 4
Sediment Chemistry Results

	Sample ID Sample Date	WS1-SS-170706 7/6/2017	WS2-SS-170706 7/6/2017	WS3-SS-170706 7/6/2017	WS4-SS-170706 7/6/2017
	ERL Numeric Target				
PCB-177	--	0.3 U	0.21 U	0.26 U	0.29 U
PCB-180	--	0.23 U	0.16 U	0.21 U	**3**
PCB-183	--	0.24 U	0.16 U	0.21 U	**0.94**
PCB-187	--	0.26 U	0.18 U	0.23 U	**1.9**
PCB-189	--	0.16 U	0.11 U	0.14 U	0.16 U
PCB-194	--	0.19 U	0.13 U	0.17 U	0.18 U
PCB-195	--	0.15 U	0.11 U	0.13 U	0.15 U
PCB-201	--	0.087 U	0.06 U	0.076 U	0.084 U
PCB-206	--	0.29 U	0.2 U	0.26 U	0.28 U
PCB-209	--	0.16 U	0.11 U	0.14 U	0.15 U
Total PCB Congener - low resolution (U = 0)	22.7	**1.2**	0.62 U	0.79 U	**42.44**
Total PCB Congeners 18 (U = 0) for SQO	--	**1.2**	0.70 U	0.89 U	**29.4**
Total PCB Congeners 18 (U = 0) x 1.72 for SQO	--	**2.1**	0.70 U	0.89 U	**50.6**

Table 4
Sediment Chemistry Results

Notes:

All non-detect results are reported at the method detection limit.

Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest limit value is reported as the sum. For SQO totals, the highest reporting limit is used. For all others, the highest method detection limit is used.

U.S. Environmental Protection Agency Stage 2A data validation was completed by Anchor QEA.

Gamma chlordane and trans-chlordane are synonymous and refer to CAS RN 5103-74-2.

Total chlordane is the sum of cis-chlordane, trans-chlordane, heptachlor, heptachlor epoxide, cis-nonachlor, trans-nonachlor, and oxychlordane.

Total DDx is the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT.

Total HPAH (8 of 12) is the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and pyrene.

Total LPAH (4 of 12) is the sum of acenaphthylene, anthracene, fluorene, and phenanthrene.

Total PAH (12) is the total of acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene.

Total HPAH (8 of 18) for SQO is the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(e)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, perylene, and pyrene.

Total LPAH (10 of 18) for SQO is the sum of 1-methylnaphthalene, 1-methylphenanthrene, 2,6-dimethylnaphthalene, 2-methylnaphthalene, acenaphthene, anthracene, biphenyl, fluorene, naphthalene, and phenanthrene.

Total PCB congener - low resolution is the sum of all PCB congeners listed in this table.

Total PCB congener for SQO is the sum of PCB-008, PCB-018, PCB-028, PCB-044, PCB-052, PCB-066, PCB-101, PCB-105, PCB-118, PCB-128, PCB-138, PCB-153, PCB-170, PCB-180, PCB-187, PCB-195, PCB-206, and PCB-209.

Detected concentration is greater than numeric sediment target

Italicized: non-detected concentration is above one or more identified screening levels

Bold: detected result

µg/kg: micrograms per kilogram

ERL: effects range low

HPAH: high-molecular-weight polycyclic aromatic hydrocarbon

J: estimated value

LPAH: low-molecular-weight polycyclic aromatic hydrocarbon

mg/kg: milligrams per kilogram

mm: millimeter

PAH: polycyclic aromatic hydrocarbon

PCB: polychlorinated biphenyl

pct: percent

SQO: Sediment Quality Objective

U: compound analyzed but not detected above detection limit

UJ: compound analyzed but not detected above estimated detection limit

Table 5
Sediment Toxicity Results

Station ID	10-Day Amphipod Percent Survival	SWI Test Percent Normal Development
WS1	99	97.9
WS2	98	97.1
WS3	98	96.7
WS4	98	97.5
Laboratory Control	99	97.1

Note:
SWI: sediment-water interface

Table 6
Benthic Community Results

Station ID	Abundance (number of individuals)	Species Richness (number of species)	Percentage of Sensitive Taxa
WS1	578	32	9.38
WS2	370	24	4.17
WS3	829	32	6.25
WS4	1,082	48	6.25

Note:
Detailed taxa are available in Appendix E.

Table 7
Sediment Quality Objective – Sediment Chemistry Line of Evidence Evaluation

Station	CSI		CA LRM		Integrated Chemistry LOE Score
	CSI Value	CSI Category Score	CA LRM Value	CA LRM Category Score	
WS1	1.74	Low	0.58	Moderate	Moderate
WS2	1.00	Minimal	0.43	Low	Low
WS3	1.19	Minimal	0.45	Low	Low
WS4	2.48	Moderate	0.86	High	High

Notes:
CA LRM: California Logistic Regression Model
CSI: Chemical Score Index
LOE: line of evidence

Table 8
Sediment Quality Objective – Toxicity Line of Evidence Evaluation

Station	Amphipod Test			Bivalve Larvae Test			Integrated Toxicity LOE Score
	Significant Effect	Mean Survival (control adjusted mean survival) (%)	Category Score	Significant Effect	Mean Development/ Survival (control adjusted mean development/survival) (%)	Category Score	
WS1	No	100	Nontoxic	No	100	Nontoxic	Nontoxic
WS2	No	99	Nontoxic	No	100	Nontoxic	Nontoxic
WS3	No	99	Nontoxic	No	100	Nontoxic	Nontoxic
WS4	No	99	Nontoxic	No	100	Nontoxic	Nontoxic

Note:
LOE: line of evidence

Table 9
Sediment Quality Objective – Sediment Chemistry Line of Evidence Evaluation

Station	BRI Category	IBI Category	RBI Category	RIVPACS Category	Integrated Category Score	Integrated Benthic LOE Category
WS1	3	2	3	1	3	Moderate Disturbance
WS2	3	2	4	3	3	Moderate Disturbance
WS3	3	2	4	2	3	Moderate Disturbance
WS4	3	2	3	1	3	Moderate Disturbance

Notes:

Benthic Category	Category Score
Reference	1
Low disturbance	2
Moderate disturbance	3
High disturbance	4

BRI: Benthic Response Index
IBI: Index of Biotic Integrity
RBI: Relative Benthic Index
RIVPACS: River Invertebrate Prediction and Classification System

Table 10
Sediment Quality Objective – Integrated Station Assessment

Station	Sediment Chemistry Exposure	Benthic Community Condition	Sediment Toxicity	Station Assessment
WS1	Moderate	Moderate Disturbance	Nontoxic	Possibly impacted
WS2	Low	Moderate Disturbance	Nontoxic	Likely unimpacted
WS3	Low	Moderate Disturbance	Nontoxic	Likely unimpacted
WS4	High	Moderate Disturbance	Nontoxic	Likely impacted

Table 11
Fish Identification, Enumeration, Lengths, and Anomalies

Station ID	Sample Date	Common Name	Scientific Name	Size Class (cm)	Abundance	Anomalies
F1A	7/11/2017	Topsmelt	*Atherinops affinis*	3	15	None
F1A	7/11/2017	Topsmelt	*Atherinops affinis*	4	27	None
F1A	7/11/2017	Topsmelt	*Atherinops affinis*	5	23	None
F1A	7/11/2017	Topsmelt	*Atherinops affinis*	6	23	None
F1A	7/11/2017	Topsmelt	*Atherinops affinis*	7	3	None
F1A	7/11/2017	Topsmelt	*Atherinops affinis*	10	4	None
F1A	7/11/2017	Northern anchovy	*Engraulis mordax*	4	1	None
F1A	7/11/2017	Northern anchovy	*Engraulis mordax*	5	18	None
F1A	7/11/2017	Northern anchovy	*Engraulis mordax*	6	25	None
F1A	7/11/2017	Northern anchovy	*Engraulis mordax*	7	18	None
F1A	7/11/2017	Northern anchovy	*Engraulis mordax*	8	14	None
F1A	7/11/2017	California killifish	*Fundulus parvipinnis*	2	1	None
F1A	7/11/2017	California killifish	*Fundulus parvipinnis*	7	1	None
F1A	7/11/2017	Arrow goby	*Clevelandia ios*	9	1	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	1	1	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	2	5	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	3	10	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	4	37	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	5	27	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	6	3	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	7	2	None
F1B	7/11/2017	Topsmelt	*Atherinops affinis*	8	1	None
F1B	7/11/2017	California killifish	*Fundulus parvipinnis*	4	1	None
F1B	7/11/2017	California killifish	*Fundulus parvipinnis*	2	1	None
F1B	7/11/2017	California halfbeak	*Hyporhamphus rosae*	13	1	None
F1B	7/11/2017	Arrow goby	*Clevelandia ios*	0	1	None
F1B	7/11/2017	Arrow goby	*Clevelandia ios*	2	15	None
F1B	7/11/2017	Arrow goby	*Clevelandia ios*	3	9	None
F1B	7/11/2017	Northern anchovy	*Engraulis mordax*	5	1	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	0	3	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	1	2	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	4	3	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	5	10	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	6	4	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	7	5	None
F1C	7/11/2017	Topsmelt	*Atherinops affinis*	8	3	None
F1C	7/11/2017	Bay pipefish	*Syngnathus leptorhynchus*	5	1	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	1	1	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	2	1	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	3	6	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	4	15	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	5	27	None

Table 11
Fish Identification, Enumeration, Lengths, and Anomalies

Station ID	Sample Date	Common Name	Scientific Name	Size Class (cm)	Abundance	Anomalies
F2	7/11/2017	Topsmelt	*Atherinops affinis*	6	19	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	7	17	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	8	4	None
F2	7/11/2017	Topsmelt	*Atherinops affinis*	9	3	None

Note:

cm: centimeter

Table 12
Fish Tissue Chemistry Results

		Sample ID Sample Date	F1-170711 7/11/2017	F2-170711 7/11/2017
	Fish Tissue Target	OEHHA FCG for Non-Cancer Risk		
Conventional Parameters (pct)				
Lipids	--	--	**1.8**	**1.6**
Polycyclic Aromatic Hydrocarbons (µg/kg)				
Acenaphthylene	--	--	1.8 U	1.8 U
Anthracene	--	--	3.4 U	3.5 U
Benzo(a)anthracene	--	--	2.1 U	2.2 U
Benzo(a)pyrene	--	--	1.8 U	1.8 U
Benzo(b)fluoranthene	--	--	2.7 U	2.7 U
Benzo(g,h,i)perylene	--	--	1.5 U	1.5 U
Benzo(k)fluoranthene	--	--	2.8 U	2.8 U
Chrysene	--	--	2.2 U	2.2 U
Dibenzo(a,h)anthracene	--	--	1.9 U	2 U
Fluorene	--	--	3.1 U	3.1 U
Indeno(1,2,3-c,d)pyrene	--	--	1.6 U	1.6 U
Phenanthrene	--	--	**3 J**	2.2 U
Pyrene	--	--	2.2 U	2.2 U
Total HPAH (8 of 12) (U= 0)	--	--	2.8 U	2.8 U
Total LPAH (4 of 12) (U = 0)	--	--	**3 J**	3.5 U
Total PAH (12) (U = 0)	5.47	--	**3 J**	3.5 U
Pesticides (µg/kg)				
2,4'-DDD (o,p'-DDD)	--	--	0.075 U	0.076 U
2,4'-DDE (o,p'-DDE)	--	--	0.035 U	0.035 U
2,4'-DDT (o,p'-DDT)	--	--	0.062 U	0.062 U
4,4'-DDD (p,p'-DDD)	--	--	**2.7**	**2.4**
4,4'-DDE (p,p'-DDE)	--	--	**17**	**29**
4,4'-DDT (p,p'-DDT)	--	--	0.052 U	0.053 UJ
Chlordane, alpha- (Chlordane, cis-)	--	--	**2.3**	**1.6**
Chlordane, beta- (Chlordane, trans-)	--	--	**1**	0.053 U
Dieldrin	0.46	160	0.11 U	-- R
Heptachlor	--	--	0.051 U	0.051 U
Heptachlor epoxide	--	--	0.044 U	0.044 U
Nonachlor, cis-	--	--	**2.1**	**1.7**
Nonachlor, trans-	--	--	**3.5**	**3.5**
Oxychlordane	--	--	0.072 U	0.073 U
Total Chlordane (U = 0)	5.6	100	**8.9**	**6.8**
Total DDx (U = 0)	21	1,600	**19.7**	**31.4 J**
PCB Congeners - Low Resolution (µg/kg)				
PCB-018	--	--	0.07 U	0.071 U
PCB-028	--	--	**0.25**	0.034 U
PCB-037	--	--	0.06 U	0.06 U
PCB-044	--	--	**0.45**	**0.31**
PCB-049	--	--	**0.35**	**0.39**
PCB-052	--	--	**0.63**	**0.95**
PCB-066	--	--	**0.98**	**1.5**
PCB-070	--	--	**0.59**	**0.89**
PCB-074	--	--	**0.38**	**0.66**
PCB-077	--	--	0.077 U	0.078 U
PCB-081	--	--	0.12 U	0.12 U
PCB-087	--	--	**0.76**	**1.1**
PCB-099	--	--	**1.5**	**2.4**
PCB-101	--	--	**2.3**	**3.4**
PCB-105	--	--	**0.74**	**1.1**

Table 12
Fish Tissue Chemistry Results

		Sample ID Sample Date	F1-170711 7/11/2017	F2-170711 7/11/2017
	Fish Tissue Target	OEHHA FCG for Non-Cancer Risk		
PCB-110	--	--	**1.5**	**2.5**
PCB-114	--	--	0.081 U	0.082 U
PCB-118	--	--	**2.4**	**4**
PCB-119	--	--	0.094 U	0.094 U
PCB-123	--	--	0.1 U	0.1 U
PCB-126	--	--	0.079 U	0.08 U
PCB-128	--	--	**0.62**	**0.99**
PCB-132/153	--	--	**5.1**	**8.5**
PCB-138/158	--	--	**3.6**	**6.4**
PCB-149	--	--	**1.8**	**3.1**
PCB-151	--	--	**0.52**	**0.8**
PCB-156	--	--	**0.25**	**0.49**
PCB-157	--	--	0.052 U	0.052 U
PCB-167	--	--	0.061 U	**0.33**
PCB-168	--	--	0.048 U	0.049 U
PCB-169	--	--	0.06 U	0.061 U
PCB-170	--	--	**0.62**	**0.75**
PCB-177	--	--	**0.46**	**0.57**
PCB-180	--	--	**1.5**	**1.9**
PCB-183	--	--	**0.53**	**0.7**
PCB-187	--	--	**1.4**	**1.9**
PCB-189	--	--	0.06 U	0.061 U
PCB-194	--	--	**0.4**	**0.45**
PCB-201	--	--	0.096 U	0.097 U
PCB-206	--	--	**0.23**	0.19 U
Total PCB Congener - low resolution (U = 0)	3.6	63	**29.86**	**46.08**

Notes:
All non-detect results are reported at the method detection limit.
Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest limit value is reported as the sum.
USEPA Stage 2A data validation was completed by Anchor QEA.
Gamma chlordane and trans-chlordane are synonymous and refer to CAS RN 5103-74-2.
Total chlordane is the sum of cis-chlordane, trans-chlordane, heptachlor, heptachlor epoxide, cis-nonachlor, trans-nonachlor, and oxychlordane.
Total DDx is the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT.
Total HPAH (8 of 12) is the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total LPAH (4 of 12) is the sum of acenaphthylene, anthracene, fluorene, and phenanthrene.
Total PAH is the total of acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene.
Total PCB congeners is the sum of all PCB congeners listed in this table.
Detected concentration is greater than Fish Tissue Target screening level
Italicized: Non-detected concentration is above one or more identified screening levels
Bold: Detected result
µg/kg: micrograms per kilogram
HPAH: high-molecular-weight polycyclic aromatic hydrocarbon
J: estimated value
LPAH: low-molecular-weight polycyclic aromatic hydrocarbon
OEHHA FCG: Office of Environmental Health Hazard Assessment Fish Contaminant Goal
PAH: polycyclic aromatic hydrocarbon
PCB: polychlorinated biphenyl
pct: percent
R: rejected
U: compound analyzed but not detected above detection limit
UJ: compound analyzed but not detected above estimated detection limit

Table 13
Topsmelt Tissue Composite Summary

Station ID[1]	Size Class (cm)	Abundance
F1	4	2
	5	10
	6	11
	7	6
	8	3
	10	3
F2	4	2
	5	12
	6	14
	7	14
	8	5
	9	3

Notes:
1. Per the Colorado Lagoon TMDL Monitoring Plan, samples from F1A, F1B, and F1C were composited and analyzed as one sample. F2 was analyzed separately.

cm: centimeter

Table 14
Summary of TMDL Numeric Target Exceedances Within Colorado Lagoon

Station ID	Number of Exceedances		
	Water	Sediment	Tissue
WS1	0	2 (zinc and total chlordane)	NA
WS2	0	0	NA
WS3	0	1 (total chlordane)	NA
F1	NA	NA	2 (total chlordane and total PCBs)
Total	**0**	**3**	**2**

Note:
NA: not applicable
PCB: polychlorinated biphenyl

Figures

SOURCE: Aerial from Bing maps.
HORIZONTAL DATUM: California State Plane, Zone 5, NAD83.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

NOTES:
Coordinates converted from California State Plane, Zone 5, NAD83 to Geographic NAD83 for field sampling.

LEGEND:

WS#	Water Sampling Locations
F#	Fish Sampling Locations
SS#	Sediment Sampling Locations

0 300
Feet

Publish Date: 2017/11/15 9:58 AM | User: mpratschner
Filepath: L:\AutoCAD Project Files_Projects\0548-City of LB\Colorado Lagoon\2013_2014_2015\0548 RP-014 SUMMER 2017.dwg FIGURE 1

ANCHOR QEA

Figure 1
Actual Sampling Locations-Summer 2017
Colorado Lagoon TMDL Monitoring
City of Long Beach

LEGEND:

Individual Category
- High
- Moderate
- Low
- Reference

Integrated Score
- Likely Impacted
- Possibly Impacted
- Likely Unimpacted

0 400
Feet

Publish Date: 2017/11/13, 5:18 PM | User: ckiblinger
Filepath: \\orcas\gis\Jobs\City_of_Long_Beach_0548\ColoradoLagoon\Maps\Yr4_SQO_Benthic\ColoradoLagoon_SQO.mxd

ANCHOR QEA

Figure 2
SQO Integrated Assessment
Colorado Lagoon TMDL Monitoring
City of Long Beach

Attachment A
Photographs

Photograph 1
Seating Area, Temporary Fence, and Bioswale

Photograph 2
Decomposed Granite Trail and Temporary Fence

Attachment B
Field Forms

ANCHOR QEA

27201 Puerta Real, Suite 350
Mission Viejo, California 92691
Phone 949.347.2780
www.anchorqea.com

Water Quality Sample Form

Project Name: Colorado Lagoon TMDL Compliance Monitoring		**Project Number:** 160548-07.02
Field Personnel: C. Dolphin, N. Kennedy	**Date:** 7/13/17	**Time:** 1035
Station ID: WS1	**Water Depth (m):** 2.1	**Tide:** (Flood) / Ebb / Slack

Coordinates

Lat/Northing: 33.77257	Long/Easting -118.13634

Weather and Wind Conditions: Sunny

Field Parameters

Sample Depth (m)	pH	DO (mg/L)	Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)
0	7.4	6.3	26.0	34.7	52658
1	7.3	6.2	25.9	34.8	52820
2					
3					
4					
5					
6					

Surface Chemistry Samples Collected: (Y) / N	Photograph(s) Taken: (Y) / N 1

QA/QC Samples Collected: (none) / field duplicate / field blank

Presence of Surface Pollution: Y (N)	Water Color: Green

Odor: (none) slight moderate strong H_2S petroleum septic

Comments:

Recorded by: C. Dolphin

ANCHOR QEA

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Water Quality Sample Form

Project Name: Colorado Lagoon TMDL Compliance Monitoring		**Project Number:** 160548-07.02
Field Personnel: C. Dolphin, N. Kennedy	**Date:** 7/13/17	**Time:** 1130
Station ID: W32	**Water Depth (m):** 1.4	**Tide:** Flood / Ebb / Slack

Coordinates

Lat/Northing: 33.77318	Long/Easting -118.13250

Weather and Wind Conditions: Sunny, light NW breeze

Field Parameters

Sample Depth (m)	pH	DO (mg/L)	Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)
0	7.7	6.2	26.7	34.2	52058
1	7.6	6.3	26.5	34.7	52083
2					
3					
4					
5					
6					

52083

Surface Chemistry Samples Collected: Y / N	Photograph(s) Taken: Y / N 1

QA/QC Samples Collected: none / field duplicate / field blank MS/MSD

Presence of Surface Pollution: Y / N	Water Color: green

Odor: none slight moderate strong H_2S petroleum septic

Comments:

Recorded by: C. Dolphin

ANCHOR QEA

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Water Quality Sample Form

Project Name: Colorado Lagoon TMDL Compliance Monitoring		**Project Number:** 160548-07.02
Field Personnel: ~~WJ3~~	**Date:** 7/13/17	**Time:** 1100
Station ID: WJ3	**Water Depth (m):** 20	**Tide:** (Flood) / Ebb / Slack

Coordinates

Lat/Northing: 33.7715	Long/Easting -118.1321

Weather and Wind Conditions: sunny

Field Parameters

Sample Depth (m)	pH	DO (mg/L)	Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)
0	7.9	6.4	25.9	34.8	52807
1	7.6	6.4	25.9	34.8	52850
2					
3					
4					
5					
6					

Surface Chemistry Samples Collected: (Y) / N	Photograph(s) Taken: (Y) / N

QA/QC Samples Collected: (none) / field duplicate / field blank

Presence of Surface Pollution: Y / (N)	Water Color: green

Odor: (none) slight moderate strong H_2S petroleum septic

Comments:

Recorded by: N Kennedy

ANCHOR QEA

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Mission Viejo, California 92691
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Water Quality Sample Form

Project Name: Colorado Lagoon TMDL Compliance Monitoring		**Project Number:** 160548.07.02
Field Personnel: N. Kennedy, C. Dillman	**Date:** 7/13/17	**Time:** 920
Station ID: WS4	**Water Depth (m):** 2.9	**Tide:** (Flood) / Ebb / Slack

Coordinates

Lat/Northing: 33.716793	Long/Easting 118.12945

Weather and Wind Conditions: light wind ; cloudy

Field Parameters

Sample Depth (m)	pH	DO (mg/L)	Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)
0	7.0	4.0	25.00	34.8	52768
1	7.0	4.0	25.00	34.8	52792
2	7.0	4.0	25.00	34.7	52768
3					
4					
5					
6					

Surface Chemistry Samples Collected: (Y) / N	Photograph(s) Taken: (Y) / N
QA/QC Samples Collected: (none) / field duplicate / field blank	
Presence of Surface Pollution: ~~Y~~ / (N)	Water Color: green

Odor: (none) slight moderate strong H_2S petroleum septic

Comments:

Recorded by: N. Kennedy

YSI 6 Series CALIBRATION WORKSHEET

PROJECT(S): Colorado Lagoon Tina PROJECT #: 160546-67.02 EQUIPMENT TYPE: YSI 6920 V2

			DO				pH				
Calib by:	Date	Time (24 Hr)	Temp. (°C)	BP (mm Hg)	Initial DO (mg/L)	Final DO (mg/L)	Temp (°C)	Initial pH 7	Final pH 7	Initial pH 10	Final pH 10
NK	7/12/17	1052	25.0	764.4	7.71	8.30	25.00	7.49	7.00	9.82	10.00

			CONDUCTIVITY					TURBIDITY					
Calib by:	Date	Time (24 Hr)	Initial 0 µs/cm	Final 0 µs/cm	Temp. (°C)	Initial 111.8 ms/cm	Final 111.8 ms/cm	Initial 0 NTU	Final 0 NTU	Temp. (°C)	Initial 126 NTU	Final 126 NTU	Serial Number
NK	7/12/17	1050			24.8	111.0	111.8	0.0	0.0	25.00	127.1	126	101752

Conductivity Stds: Calibration: 111.8 ms/cm
Lot# 76C733 Exp. Date: 3/18

pH Buffers:
pH 7 Lot# 76A563 Exp. Date: 1/19
pH 10 Lot# 76C1135 Exp. Date: 3/19
pH 4 Lot# _____ Exp. Date: _____

Dissolved Oxygen Method (circle one):
Air Saturated Water Winkler Titration

Source of Barometric Pressure CoO MDS

Turbidity Stds:
0 NTU Distilled
126 NTU Lot# 16L691965 Exp. Date: 11/17

2 wiper rotations prior to calibration

NOTES:

Surface Sediment Field Sample Record

ANCHOR QEA

Project Name: Colorado Lagoon TMDL Compliance Monitoring **Station ID:** WS1-SS

Field Personnel: C. Osuch, S. LaMothe
Date: 7/6/17
Sampling Vessel: Zodiac
Station Coordinates: 33.77248° 118.13624°
Datum: NAD 83 / WGS 84

Sample ID: WS1-SS-170706
Sampling Method: ~~Ponar~~ or Van Veen
Weather: clear + sunny
Water Depth (m): 8.5 or ft

Analysis: Total metals / OC Pest / PCBs / PAHs (All)
Particle Size / Percent Solids / TOC / Sediment Toxicity

Grab Number: 1	Grab Recovery: 19 cm	Sample Interval: 19 cm	Time: 1310

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O. very dark grey surface	(none)	H2S	(none)	Benthic
gravel	(gray)	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
(silt clay)	brown	strong		heavy	
(organic matter) top 3 cm	brown surface	overwhelming			

Grab Number: 2	Grab Recovery: 19 cm	Sample Interval: 5 cm	Time: 1329

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O. very dark gray surface	(none)	H2S	(none)	chemistry + Eoh toxicity
gravel	(gray)	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
(silt clay)	brown	strong		heavy	
(organic matter) @ surface	brown surface	overwhelming			

Grab Number: 3	Grab Recovery: 19 cm	Sample Interval: 5 cm	Time: 1350

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O. very dark gray surface	(none)	H2S	(none)	SW1
gravel	(gray)	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
(silt clay)	brown	strong		heavy	
(organic matter) @ surface	brown surface	overwhelming			

Grab Number:	Grab Recovery: cm	Sample Interval: cm	Time:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Notes:

3 **No. Photos Taken**

Recorded By: [signature]

Surface Sediment Field Sample Record

ANCHOR QEA

Project Name: Colorado Lagoon TMDL Compliance Monitoring **Station ID:** WS2-SS

Field Personnel: C. Osuch, S. LaMothe
Date: 7/6/17
Sampling Vessel: Zodiac
Station Coordinates: 33.77312° 118.13242
Datum: NAD 83 / WGS 84

Sample ID: WS2-SS-170706
Sampling Method: Ponar Van Veen
Weather: clear + sunny
Water Depth (~~m~~ ft): 6.2

Analysis: Total metals / OC Pest / PCBs / PAHs (All)
Particle Size / Percent Solids / TOC / Sediment Toxicity

Grab Number: 1	Grab Recovery: 15 cm	Sample Interval: 15 cm	Time: 1725

Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	(none) H2S	(none)	benthic
gravel	(gray) below 9 cm	slight petroleum	slight	
(sand) C (M) F below 9 cm	black	moderate other:	moderate	
(slightly sandy) silt clay to 9 cm	(brown) to 9 cm	strong	heavy	
organic matter	~~brown surface~~	overwhelming		

Grab Number: 2	Grab Recovery: 15 cm	Sample Interval: 5 cm	Time: 1743

Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	(none) H2S	(none)	Chemistry + Eco Toxicity
gravel	(gray) below 9 cm	slight petroleum	slight	
(sand) C (M) F below 9 cm	black	moderate other:	moderate	
(slightly sandy) silt clay to 9 cm	(brown) to 9 cm	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number: 3	Grab Recovery: 15 cm	Sample Interval: 5 cm	Time: 1807

Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	(none) H2S	(none)	SW1
gravel	(gray) below 9 cm	slight petroleum	slight	
(sand) C (M) F below 9 cm	black	moderate other:	moderate	
(slightly sandy) silt clay to 9 cm	(brown) to 9 cm	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number:	Grab Recovery: cm	Sample Interval: cm	Time:

Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Notes:

3 No. Photos Taken

Recorded By: Chris Osuch

Surface Sediment Field Sample Record

ANCHOR QEA

Project Name: Colorado Lagoon TMDL Compliance Monitoring **Station ID:** WS3-55

Field Personnel: C. Osuch S. LaMothe
Date: 7/6/17
Sampling Vessel: Zodiac
Station Coordinates: 33.77163° 118.13219°
Datum: NAD 83 / WGS 84

Sample ID: WS3-55-170706
Sampling Method: ~~Ponar~~ Van Veen
Weather: clear + sunny
Water Depth (m): ~~6.6~~ ft

Analysis: Total metals / OC Pest / PCBs / PAHs (All)
Particle Size / Percent Solids / TOC / Sediment Toxicity

Grab Number: 1 Grab Recovery: 19 cm Sample Interval: 19 cm Time: 1524

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	(gray)	slight	petroleum	slight	Benthic
sand C M F	black	moderate	other:	moderate	
(silt clay) w/ trace f-sand	brown	strong		heavy	
organic matter	(olive brown surface)	overwhelming			

Sediment Color: thin tan layer below surface, then thin black layer, then gray

Grab Number: 2 Grab Recovery: 18 cm Sample Interval: 5 cm Time: 1535

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	(none)	H2S	(none)	
gravel	(gray) below 6 cm	slight	petroleum	slight	Chemistry + EOS toxicity
sand C M F	black	moderate	other:	moderate	
(silt clay) w/ trace f-sand	brown	strong		heavy	
organic matter	(olive brown surface) 5 cm	overwhelming			

Sediment Color: tan @ 2 cm – black @ 5 cm

Grab Number: 3 Grab Recovery: 19 cm Sample Interval: 5 cm Time: 1608

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	(none)	H2S	(none)	
gravel	(gray)	slight	petroleum	slight	SW1
sand C M F	black	moderate	other:	moderate	
(silt clay) w/ trace f-sand	brown	strong		heavy	
organic matter	(olive brown surface)	overwhelming			

Sediment Color: thin tan layer below surface, then thin black layer then gray

Grab Number: _____ Grab Recovery: _____ cm Sample Interval: _____ cm Time: _____

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Notes:

2 **No. Photos Taken**

Recorded By: C. Osuch

Surface Sediment Field Sample Record

ANCHOR QEA

Project Name: Colorado Lagoon TMDL Compliance Monitoring **Station ID:** WS4-SS

Field Personnel: C. Osuch / C. Dolphin
Sample ID: WS4-SS-~~014~~ 170704
Date: 7/6/17
Sampling Method: ~~Ponar~~ Van Veen
Sampling Vessel: Sir Sci
Weather: Sunny
Station Coordinates: 33° 46' 0.0"
-118° 07' 74.1
Water Depth (~~m~~ ft): 1.8
0900
Datum: NAD 83 / WGS 84

Analysis: Total metals / OC Pest / PCBs / PAHs (All)
Particle Size / Percent Solids / TOC / Sediment Toxicity

Grab Number: 1 Grab Recovery: 9 cm Sample Interval: 0-9 cm Time: 0915

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	Benthic
gravel	dark gray	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
Sandy silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number: 2 Grab Recovery: 9 cm Sample Interval: 0-5 cm Time: 0930

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	SWF
gravel	gray	slight	petroleum	slight	flat surface, overlying water
sand C M F	black	moderate	other:	moderate	
Sandy silt clay	brown	strong		heavy	2 photos
organic matter	brown surface	overwhelming			

Grab Number: 3 Grab Recovery: 9 cm Sample Interval: 0-5 cm Time: 0950

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	chemistry
gravel	gray	slight	petroleum	slight	& toxicity
sand C M F	black	moderate	other:	moderate	2 photos
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number: _____ Grab Recovery: _____ cm Sample Interval: _____ cm Time: _____

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Notes:

4 **No. Photos Taken**

Recorded By: C. Dolphin

ANCHOR QEA

Benthic Sample Processing Log

Job: Colorado Lagoon TMDL Benthic sampling
Date: 7/6/17
Job No: 160548-07.02
Field Staff: Chris Osuch, Claire Dolphin
Subontractor:

Station ID	Grab #	Sample ID	Sample Container	Number of Containers	Time
WS4-SS	1	WS4-BE-170706	HDPE 1 L	2	0915
WS1-SS	1	WS1-BE-170706	↓	2	1310
WS3-SS	1	WS3-BE-170706	↓	1	1524
WS2-SS	1	WS2-BE-170706	↓	4	1725

Notes:

Colorado Lagoon Fish Sampling Data Sheet

Sampling Date: 7/11/17	Personnel: C. Dolphin / Tidal Influence		Tide: Flood / Ebb / Slack
Station ID: F1a	Start Time: 702	End Time: 0710	Seine #: 1
Coordinates	Latitude: 33.77090	Longitude: -118.13511	

Fish Species: Topsmelt (Atherinops affinis)

Length (~~mm~~) cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
10.4	4.5	10.2	3.0	4.2	4.5	10.2	4.6	6.0	6.3	6.3	7.4	4.1	4.3	6.4	4.0	4.2	4.5	5.5	4.6	4.7	5.5	5.9	6.3	5.6
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
6.6	4.4	6.7	5.5	5.9	4.5	6.1	6.4	5.2	3.3	4.7	4.7	3.4	3.7	5.7	5.0	3.1	3.5	6.2	3.5	5.5	6.8	3.3	4.2	4.6
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
3.8	4.7	5.2	6.3	4.8	5.5	5.6	4.5	5.0	4.2	5.4	5.2	5.6	4.9	5.2	6.9	5.0	6.1	6.7	6.1	6.9	7.1	3.6	6.6	7.4
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
6.6	4.2	5.1	5.7	6.4	4.8	3.8	3.2	6.9	10.1	4.5	4.2	6.1	6.5	4.8	5.8	5.3	4.7	3.3	3.1	3.4				

Fish Species: N. anchovy

Length (~~mm~~) cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
7.6	5.1	7.1	5.1	7.4	8.8	7.0	6.6	8.6	7.3	7.9	7.5	5.5	8.3	6.7	8.4	8.9	5.1	6.8	5.0	7.1	5.8	5.5	8.6	6.6
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
5.7	6.7	6.6	6.9	8.5	5.5	8.7	7.0	7.0	5.3	8.1	6.0	8.7	5.8	7.5	8.7	6.3	7.2	6.2	7.3	7.9	7.3	5.3	5.1	7.3
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
5.5	5.4	5.1	8.4	6.6	6.7	6.6	6.2	6.5	6.7	8.5	6.5	7.0	6.3	4.9	6.0	7.5	6.1	7.3	5.8	8.0	6.3	5.9	6.5	6.7
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
5.5	6.2																							

Comments:
~~Fish fish 7.4~~ Arrow goby: 1 (7.2 cm)

○ = saved

Colorado Lagoon Fish Sampling Data Sheet

Sampling Date: 7/11/17	Personnel: C. Dolphin / Tidal Influence		Tide: Flood / Ebb / Slack
Station ID: ~~3~~ Fla	Start Time: 0702	End Time: 710	Seine #: 1
Coordinates	Latitude: 33.77090	Longitude: -118.13511	

Fish Species: CA Killifish

Length (~~mm~~ cm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
7.4	2.8																							
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Fish Species:

Length (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Comments:

Colorado Lagoon Fish Sampling Data Sheet

Sampling Date: 7/11/17	Personnel: C. Dolphin / Tidal Influence		Tide: Flood / Ebb / Slack
Station ID: F1	Start Time: 0800	End Time: 507	Seine #: 1
Coordinates	Latitude: 33.77098	Longitude: -118.13194	

Fish Species: Topsmelt (Atherinops affinis)

Length (~~mm~~) cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
5.7	4.7	7.6	5.2	5.6	5.8	5.7	5.4	4.5	5.6	4.2	4.3	5.9	5.6	4.1	4.9	5.2	4.7	5.9	4.7	5.1	4.7	4.8	4.5	7.0
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
4.7	3.1	4.6	5.4	4.7	4.3	4.6	5.7	4.2	2.9	3.1	5.7	4.5	4.7	5.1	4.9	3.6	6.4	5.9	3.9	4.4	4.7	5.3	5.0	4.3
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
4.6	4.7	5.2	5.7	4.8	4.8	4.3	4.7	4.8	4.5	3.1	4.0	3.8	2.9	2.1	5.5	4.5	4.9	4.2	4.5	5.4	5.0	4.9	2.9	4.7
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
5.3	5.7	5.2	4.5	5.4	3.0	3.8	6.2	2.8	5.9	4.5	3.3													

Fish Species: Killifish

Length (~~mm~~) cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
4.1	2.7																							
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Comments:
CA half ~~bar~~ : 1 (13.2 cm)

) = Save

Colorado Lagoon Fish Sampling Data Sheet

Sampling Date: 7/11/17	Personnel: C. Dolphin / Tidal Influence		Tide: Flood / Ebb / Slack
Station ID: F1	Start Time: 0800	End Time: 0807	Seine #: 1
Coordinates	Latitude: 33.77098	Longitude: -118.13194	

Fish Species: Northern anchovy

Length (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
5.5																								
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Fish Species: Arrow goby

Length (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
3.5	3.1	0.8	2.3	3.5	3.0	2.7	2.5	3.3	2.0	2.8	3.0	2.9	2.9	3.5	2.8	3.3	2.6	2.6	2.4	2.7	3.6	2.1	2.6	2.7
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Comments:

Colorado Lagoon Fish Sampling Data Sheet

Sampling Date: 7/11/17	Personnel: C. Dolphin / Tidal Influence		Tide: Flood / Ebb / Slack
Station ID: F1c	Start Time: 0855	End Time: 0903	Seine #: 1
Coordinates	Latitude: 33.77280	Longitude: -118.13200	

Fish Species: Topsmelt (Atherinops affinis)

Length ~~(mm)~~ cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
8.4	5.5	6.2	7.0	7.2	5.2	5.6	6.3	5.6	4.4	4.2	5.0	6.0	4.9	5.9	5.9	6.2	7.4	5.5	7.9	5.0	1.7	5.9	7.9	8.1
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
1.5	0.06	0.06	0.06																					
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Fish Species:

Length ~~(mm)~~ cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Comments:

Bay pipefish : 1 (5.5 cm)

Colorado Lagoon Fish Sampling Data Sheet

Sampling Date: 7/11/17	Personnel: C. Dolphin		Tide: Flood / Ebb / Slack
Station ID: F2	Start Time: 0940	End Time: 0947	Seine #: 1
Coordinates	Latitude: 33.76813	Longitude: -118.12910	

Fish Species: Topsmelt

Length ~~(mm)~~ cm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
9.6	7.8	6.7	4.5	7.5	7.0	8.1	6.5	5.7	7.3	5.5	6.6	6.4	5.4	6.9	4.0	5.9	4.1	5.1	5.9	5.3	5.9	3.5	4.4	6.1
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
2.0	5.8	5.8	6.7	6.1	4.4	7.7	6.0	7.1	5.3	6.8	8.2	5.2	6.0	8.3	3.4	6.0	7.5	7.3	9.0	3.9	6.8	9.1	4.0	6.7
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
8.1	5.7	5.1	7.0	7.8	5.0	4.8	7.3	5.5	4.5	6.3	4.5	7.2	7.1	5.9	7.4	7.8	4.3	7.4	6.7	7.7	4.2	4.5	3.5	5.8
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
5.7	5.9	5.4	6.9	5.5	3.5	6.5	1.4	5.0	6.4	4.8	5.8	4.2	5.0	5.0	5.8	3.9	6.1	5.3	4.7					

Fish Species:

Length (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

Comments:

50

Fish Compositing Form

ANCHOR QEA

Composite Sample ID F1

Compositing Date 7/11/17

Project Name CL TMDL Fish tissue

Field Personnel C. Dolphin, Tidal Influence

Species	Size (cm)	Abundance	Station ID	Collection Date
Topsmelt (Atherinops affinis)	10.6	1	F1a	7/11/17
	10.2	2		
	4.5	2		
	6.0	1		
	6.3	1		
	7.4	1		
	6.4	1		
	5.5	1		
	6.6	1		
	6.1	1		
	6.4	1		
	~~4.7~~			
	5.7	1		
	6.2	1		
	6.8	1		
	6.7	1		
	8.1	1	F1b	
	5.8	1		
	5.7	~~2~~ 3		
	5.9	~~2~~ 3		

Comments

_____ No. Photos Taken

Page 1 of ~~1~~ 2

Recorded By C. Dolphin

Fish Compositing Form

ANCHOR QEA

Composite Sample ID F1

Compositing Date 7/11/17

Project Name CL TMDL Fish

Field Personnel C. Dolphin

Species	Size (cm)	Abundance	Station ID	Collection Date
Topsmelt (Atherinops affinis)	7.0	1	F1b	7/11/17
↓	6.4	1	↓	↓
↓	5.2	1	↓	↓
—	~~5.7~~	—	—	—
Topsmelt	8.4	1	F1c	7/11/17
↓	6.2	1	↓	↓
↓	7.0	1	↓	↓
↓	7.2	1	↓	↓
↓	7.9	2	↓	↓
↓	8.1	1	↓	↓

Comments

1 No. Photos Taken

Page 2 of 2

Recorded By C. Dolphin

Fish Compositing Form

ANCHOR QEA

Composite Sample ID F2

Compositing Date 7/11/17

Project Name CL TMDL Tissue

Field Personnel C. Dolphin / Tidal Influence

Species	Size (cm)	Abundance	Station ID	Collection Date
Topsmelt (Atherinops affinis)	9.6	1	F2	7/11/17
	7.8	3		
	6.7	2		
	7.5	2		
	7.0	2		
	8.1	2		
	6.5	1		
	7.3	1		
	6.9	3		
	5.9	5		
	5.1	1		
	6.1	3		
	5.8	3		
	6.7	2		
	7.7	1		
	7.1	2		
	6.8	1		
	8.2	1		
	5.2	1		
	8.3	1		

Comments

— No. Photos Taken

Page 1 of 2

Recorded By C. Dolphin

Fish Compositing Form

ANCHOR QEA

Composite Sample ID F2

Compositing Date 7/11/17

Project Name CL TMDL Tissue

Field Personnel C. Dolphin / Tidal Influence

Species	Size (cm)	Abundance	Station ID	Collection Date
Topsmelt	6.0	1	F2	7/11/17
	~~7.5~~ 9.0	1		
	9.1	1		
	8.1	1		
	5.7	2		
	7.2	1		
	7.4	2		
	4.2	1		
	4.5	1		
	6.4	1		

Comments

– No. Photos Taken

Page 2 of 2

Recorded By C. Dolphin

Attachment C
Chemistry Laboratory Reports

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WORK ORDER NUMBER: 17-07-0701

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: ANCHOR QEA, LLC

Client Project Name: Colorado Lagoon

Attention: Chris Osuch
27201 Puerta Real
Suite 350
Mission Viejo, CA 92691-8306

Approved for release on 08/02/2017 by:
Carla Hollowell
Project Manager

ResultLink

Email your PM

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

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Contents

Client Project Name: Colorado Lagoon
Work Order Number: 17-07-0701

1 Work Order Narrative. 3

2 Sample Summary. 4

3 Client Sample Data. 5
3.1 EPA 350.1 Ammonia (Aqueous). 5
3.2 EPA 351.2 Total Kjeldahl Nitrogen (Aqueous). 6
3.3 EPA 365.1 Total Phosphorus (Aqueous). 7
3.4 EPA 365.1 (M) Ortho Phosphate (Aqueous). 8
3.5 SM 2540 D Total Suspended Solids (Aqueous). 9
3.6 SM 4500-NO3 E/SM 4500-NO2 B Nitrate Only (Aqueous). 10
3.7 EPA 1640 ICP/MS Metals (Aqueous). 11
3.8 EPA 1640 ICP/MS Metals (Aqueous). 12
3.9 EPA 8270C PEST-SIM, WATER (Aqueous). 13
3.10 EPA 8270C SIM PAHs (Aqueous). 18
3.11 EPA 8270C SIM PCB Congeners (Aqueous). 23

4 Quality Control Sample Data. 33
4.1 MS/MSD. 33
4.2 Sample Duplicate. 42
4.3 LCS/LCSD. 43

5 Glossary of Terms and Qualifiers. 54

6 Chain-of-Custody/Sample Receipt Form. 55

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Work Order Narrative

Work Order: 17-07-0701 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/13/17. They were assigned to Work Order 17-07-0701.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Return to Contents

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Sample Summary

Client:	ANCHOR QEA, LLC 27201 Puerta Real, Suite 350 Mission Viejo, CA 92691-8306	Work Order:	17-07-0701
		Project Name:	Colorado Lagoon
		PO Number:	CO-032117
		Date/Time Received:	07/13/17 13:00
		Number of Containers:	52
Attn:	Chris Osuch		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
WS1-SW-170713	17-07-0701-1	07/13/17 10:35	10	Aqueous
WS2-SW-170713	17-07-0701-2	07/13/17 11:30	22	Aqueous
WS3-SW-170713	17-07-0701-3	07/13/17 11:00	10	Aqueous
WS4-SW-170713	17-07-0701-4	07/13/17 09:20	10	Aqueous

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 350.1
		Units:	mg/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-E**	**07/13/17 10:35**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	0.027	0.050	0.0086	1.00	J

WS2-SW-170713	**17-07-0701-2-E**	**07/13/17 11:30**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	0.023	0.050	0.0086	1.00	J

WS3-SW-170713	**17-07-0701-3-E**	**07/13/17 11:00**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	0.026	0.050	0.0086	1.00	J

WS4-SW-170713	**17-07-0701-4-E**	**07/13/17 09:20**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	0.025	0.050	0.0086	1.00	J

Method Blank	**099-12-735-357**	**N/A**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Ammonia (as N)	ND	0.050	0.0086	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 351.2
		Units:	mg/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-F**	**07/13/17 10:35**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Total Kjeldahl Nitrogen	0.35	0.20	0.047	1.00	

WS2-SW-170713	**17-07-0701-2-F**	**07/13/17 11:30**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Total Kjeldahl Nitrogen	0.34	0.20	0.047	1.00	

WS3-SW-170713	**17-07-0701-3-F**	**07/13/17 11:00**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Total Kjeldahl Nitrogen	0.32	0.20	0.047	1.00	

WS4-SW-170713	**17-07-0701-4-F**	**07/13/17 09:20**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Total Kjeldahl Nitrogen	0.29	0.20	0.047	1.00	

Method Blank	**099-12-741-279**	**N/A**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Total Kjeldahl Nitrogen	ND	0.20	0.047	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 365.1
		Units:	mg/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-A**	**07/13/17 10:35**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Phosphorus, Total	0.022	0.050	0.020	1.00	J

WS2-SW-170713	**17-07-0701-2-A**	**07/13/17 11:30**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Phosphorus, Total	0.064	0.050	0.020	1.00	

WS3-SW-170713	**17-07-0701-3-A**	**07/13/17 11:00**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Phosphorus, Total	ND	0.050	0.020	1.00	

WS4-SW-170713	**17-07-0701-4-A**	**07/13/17 09:20**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Phosphorus, Total	ND	0.050	0.020	1.00	

Method Blank	**099-12-739-192**	**N/A**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Phosphorus, Total	ND	0.050	0.020	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 365.1 (M)
		Units:	mg/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-B**	**07/13/17 10:35**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
o-Phosphate (as P)	ND	0.050	0.017	1.00	

WS2-SW-170713	**17-07-0701-2-B**	**07/13/17 11:30**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
o-Phosphate (as P)	0.022	0.050	0.017	1.00	J

WS3-SW-170713	**17-07-0701-3-B**	**07/13/17 11:00**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
o-Phosphate (as P)	ND	0.050	0.017	1.00	

WS4-SW-170713	**17-07-0701-4-B**	**07/13/17 09:20**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
o-Phosphate (as P)	ND	0.050	0.017	1.00	

Method Blank	**099-12-737-112**	**N/A**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
o-Phosphate (as P)	ND	0.050	0.017	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 2540 D
		Units:	mg/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-J**	**07/13/17 10:35**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	3.7	1.0	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SW-170713	**17-07-0701-2-J**	**07/13/17 11:30**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	7.7	1.0	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SW-170713	**17-07-0701-3-J**	**07/13/17 11:00**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	3.5	1.0	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SW-170713	**17-07-0701-4-J**	**07/13/17 09:20**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	ND	1.0	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-09-010-8456**	**N/A**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	ND	1.0	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 4500-NO3 E/SM 4500-NO2 B
		Units:	mg/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-B**	**07/13/17 10:35**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Nitrate (as N)	ND	0.10	0.029	1.00	

WS2-SW-170713	**17-07-0701-2-L**	**07/13/17 11:30**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Nitrate (as N)	0.046	0.10	0.029	1.00	J

WS3-SW-170713	**17-07-0701-3-B**	**07/13/17 11:00**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Nitrate (as N)	ND	0.10	0.029	1.00	

WS4-SW-170713	**17-07-0701-4-B**	**07/13/17 09:20**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Nitrate (as N)	0.036	0.10	0.029	1.00	J

Method Blank	**099-04-011-1575**	**N/A**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Nitrate (as N)	ND	0.10	0.029	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3005A Total
		Method:	EPA 1640
		Units:	ug/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-D**	**07/13/17 10:35**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 23:52**	**170717L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.280	0.0300	0.0135	1.00	
Zinc	3.18	0.500	0.176	1.00	

WS2-SW-170713	**17-07-0701-2-D**	**07/13/17 11:30**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 22:26**	**170717L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.388	0.0300	0.0135	1.00	
Zinc	3.19	0.500	0.176	1.00	

WS3-SW-170713	**17-07-0701-3-D**	**07/13/17 11:00**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 23:59**	**170717L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.233	0.0300	0.0135	1.00	
Zinc	3.68	0.500	0.176	1.00	

WS4-SW-170713	**17-07-0701-4-D**	**07/13/17 09:20**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/21/17 00:34**	**170717L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.213	0.0300	0.0135	1.00	
Zinc	4.44	0.500	0.176	1.00	

Method Blank	**099-13-067-717**	**N/A**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/19/17 14:45**	**170717L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	ND	0.0300	0.0135	1.00	
Zinc	ND	0.500	0.176	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3005A Filt.
		Method:	EPA 1640
		Units:	ug/L
Project: Colorado Lagoon			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-C**	**07/13/17 10:35**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 23:23**	**170717L01F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.170	0.0300	0.0135	1.00	
Zinc	4.05	0.500	0.0736	1.00	B

WS2-SW-170713	**17-07-0701-2-C**	**07/13/17 11:30**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 23:30**	**170717L01F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.318	0.0300	0.0135	1.00	
Zinc	2.71	0.500	0.0736	1.00	B

WS3-SW-170713	**17-07-0701-3-C**	**07/13/17 11:00**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 23:38**	**170717L01F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.118	0.0300	0.0135	1.00	
Zinc	2.41	0.500	0.0736	1.00	B

WS4-SW-170713	**17-07-0701-4-C**	**07/13/17 09:20**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 23:45**	**170717L01F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	0.118	0.0300	0.0135	1.00	
Zinc	5.03	0.500	0.0736	1.00	B

Method Blank	**099-15-823-280**	**N/A**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/19/17 14:09**	**170717L01F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Lead	ND	0.0300	0.0135	1.00	
Zinc	0.108	0.500	0.0736	1.00	J

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
		Units:	ug/L
Project: Colorado Lagoon			Page 1 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-h**	**07/13/17 10:35**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 14:59**	**170720L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.0019	0.00046	1.00	
Cis-nonachlor	ND	0.0019	0.00055	1.00	
2,4'-DDD	ND	0.0019	0.00046	1.00	
2,4'-DDE	ND	0.0019	0.00048	1.00	
2,4'-DDT	ND	0.0019	0.00059	1.00	
4,4'-DDD	ND	0.0019	0.00049	1.00	
4,4'-DDE	ND	0.0019	0.00073	1.00	
4,4'-DDT	ND	0.0019	0.00084	1.00	
Dieldrin	ND	0.0019	0.00056	1.00	
Gamma Chlordane	ND	0.0019	0.00065	1.00	
Heptachlor	ND	0.0019	0.00074	1.00	
Heptachlor Epoxide	ND	0.0019	0.00052	1.00	
Oxychlordane	ND	0.0019	0.00053	1.00	
Trans-nonachlor	ND	0.0019	0.00059	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	96	25-200	
2,4,5,6-Tetrachloro-m-Xylene	78	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
		Units:	ug/L
Project: Colorado Lagoon			Page 2 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SW-170713	**17-07-0701-2-h**	**07/13/17 11:30**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 15:15**	**170720L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.0019	0.00046	1.00	
Cis-nonachlor	ND	0.0019	0.00055	1.00	
2,4'-DDD	ND	0.0019	0.00046	1.00	
2,4'-DDE	ND	0.0019	0.00048	1.00	
2,4'-DDT	ND	0.0019	0.00059	1.00	
4,4'-DDD	ND	0.0019	0.00049	1.00	
4,4'-DDE	ND	0.0019	0.00073	1.00	
4,4'-DDT	ND	0.0019	0.00084	1.00	
Dieldrin	ND	0.0019	0.00056	1.00	
Gamma Chlordane	ND	0.0019	0.00065	1.00	
Heptachlor	ND	0.0019	0.00074	1.00	
Heptachlor Epoxide	ND	0.0019	0.00052	1.00	
Oxychlordane	ND	0.0019	0.00053	1.00	
Trans-nonachlor	ND	0.0019	0.00059	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	92	25-200	
2,4,5,6-Tetrachloro-m-Xylene	75	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
		Units:	ug/L
Project: Colorado Lagoon			Page 3 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SW-170713	**17-07-0701-3-h**	**07/13/17 11:00**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 15:31**	**170720L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.0019	0.00046	1.00	
Cis-nonachlor	ND	0.0019	0.00055	1.00	
2,4'-DDD	ND	0.0019	0.00046	1.00	
2,4'-DDE	ND	0.0019	0.00048	1.00	
2,4'-DDT	ND	0.0019	0.00059	1.00	
4,4'-DDD	ND	0.0019	0.00049	1.00	
4,4'-DDE	ND	0.0019	0.00073	1.00	
4,4'-DDT	ND	0.0019	0.00084	1.00	
Dieldrin	ND	0.0019	0.00056	1.00	
Gamma Chlordane	ND	0.0019	0.00065	1.00	
Heptachlor	ND	0.0019	0.00074	1.00	
Heptachlor Epoxide	ND	0.0019	0.00052	1.00	
Oxychlordane	ND	0.0019	0.00053	1.00	
Trans-nonachlor	ND	0.0019	0.00059	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	101	25-200	
2,4,5,6-Tetrachloro-m-Xylene	84	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
		Units:	ug/L
Project: Colorado Lagoon			Page 4 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SW-170713	**17-07-0701-4-h**	**07/13/17 09:20**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 15:47**	**170720L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.0019	0.00046	1.00	
Cis-nonachlor	ND	0.0019	0.00055	1.00	
2,4'-DDD	ND	0.0019	0.00046	1.00	
2,4'-DDE	ND	0.0019	0.00048	1.00	
2,4'-DDT	ND	0.0019	0.00059	1.00	
4,4'-DDD	ND	0.0019	0.00049	1.00	
4,4'-DDE	ND	0.0019	0.00073	1.00	
4,4'-DDT	ND	0.0019	0.00084	1.00	
Dieldrin	ND	0.0019	0.00056	1.00	
Gamma Chlordane	ND	0.0019	0.00065	1.00	
Heptachlor	ND	0.0019	0.00074	1.00	
Heptachlor Epoxide	ND	0.0019	0.00052	1.00	
Oxychlordane	ND	0.0019	0.00053	1.00	
Trans-nonachlor	ND	0.0019	0.00059	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	99	25-200	
2,4,5,6-Tetrachloro-m-Xylene	82	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
		Units:	ug/L
Project: Colorado Lagoon			Page 5 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-186-39**	**N/A**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 13:23**	**170720L02**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.0020	0.00048	1.00	
Cis-nonachlor	ND	0.0020	0.00057	1.00	
2,4'-DDD	ND	0.0020	0.00047	1.00	
2,4'-DDE	ND	0.0020	0.00050	1.00	
2,4'-DDT	ND	0.0020	0.00061	1.00	
4,4'-DDD	ND	0.0020	0.00051	1.00	
4,4'-DDE	ND	0.0020	0.00076	1.00	
4,4'-DDT	ND	0.0020	0.00088	1.00	
Dieldrin	ND	0.0020	0.00059	1.00	
Gamma Chlordane	ND	0.0020	0.00068	1.00	
Heptachlor	ND	0.0020	0.00077	1.00	
Heptachlor Epoxide	ND	0.0020	0.00054	1.00	
Oxychlordane	ND	0.0020	0.00055	1.00	
Trans-nonachlor	ND	0.0020	0.00061	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	128	25-200	
2,4,5,6-Tetrachloro-m-Xylene	99	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
		Units:	ug/L
Project: Colorado Lagoon			Page 1 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-I**	**07/13/17 10:35**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/19/17 14:06**	**170714L13**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.20	0.018	1.00	
Fluorene	ND	0.20	0.024	1.00	
Phenanthrene	ND	0.20	0.031	1.00	
Anthracene	ND	0.20	0.034	1.00	
Pyrene	ND	0.20	0.025	1.00	
Benzo (a) Anthracene	ND	0.20	0.024	1.00	
Chrysene	ND	0.20	0.019	1.00	
Benzo (k) Fluoranthene	ND	0.20	0.023	1.00	
Benzo (b) Fluoranthene	ND	0.20	0.025	1.00	
Benzo (a) Pyrene	ND	0.20	0.036	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	0.022	1.00	
Dibenz (a,h) Anthracene	ND	0.20	0.027	1.00	
Benzo (g,h,i) Perylene	ND	0.20	0.022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	98	28-139	
2-Fluorobiphenyl	102	33-144	
p-Terphenyl-d14	108	23-160	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
		Units:	ug/L
Project: Colorado Lagoon			Page 2 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SW-170713	**17-07-0701-2-I**	**07/13/17 11:30**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/19/17 14:26**	**170714L13**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.20	0.018	1.00	
Fluorene	ND	0.20	0.024	1.00	
Phenanthrene	ND	0.20	0.031	1.00	
Anthracene	ND	0.20	0.034	1.00	
Pyrene	ND	0.20	0.025	1.00	
Benzo (a) Anthracene	ND	0.20	0.024	1.00	
Chrysene	ND	0.20	0.019	1.00	
Benzo (k) Fluoranthene	ND	0.20	0.023	1.00	
Benzo (b) Fluoranthene	ND	0.20	0.025	1.00	
Benzo (a) Pyrene	ND	0.20	0.036	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	0.022	1.00	
Dibenz (a,h) Anthracene	ND	0.20	0.027	1.00	
Benzo (g,h,i) Perylene	ND	0.20	0.022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	82	28-139	
2-Fluorobiphenyl	86	33-144	
p-Terphenyl-d14	92	23-160	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
		Units:	ug/L
Project: Colorado Lagoon			Page 3 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SW-170713	**17-07-0701-3-I**	**07/13/17 11:00**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/19/17 14:45**	**170714L13**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.20	0.018	1.00	
Fluorene	ND	0.20	0.024	1.00	
Phenanthrene	ND	0.20	0.031	1.00	
Anthracene	ND	0.20	0.034	1.00	
Pyrene	ND	0.20	0.025	1.00	
Benzo (a) Anthracene	ND	0.20	0.024	1.00	
Chrysene	ND	0.20	0.019	1.00	
Benzo (k) Fluoranthene	ND	0.20	0.023	1.00	
Benzo (b) Fluoranthene	ND	0.20	0.025	1.00	
Benzo (a) Pyrene	ND	0.20	0.036	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	0.022	1.00	
Dibenz (a,h) Anthracene	ND	0.20	0.027	1.00	
Benzo (g,h,i) Perylene	ND	0.20	0.022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	109	28-139	
2-Fluorobiphenyl	114	33-144	
p-Terphenyl-d14	114	23-160	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
		Units:	ug/L
Project: Colorado Lagoon			Page 4 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SW-170713	**17-07-0701-4-I**	**07/13/17 09:20**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/19/17 15:05**	**170714L13**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.20	0.018	1.00	
Fluorene	ND	0.20	0.024	1.00	
Phenanthrene	ND	0.20	0.031	1.00	
Anthracene	ND	0.20	0.034	1.00	
Pyrene	ND	0.20	0.025	1.00	
Benzo (a) Anthracene	ND	0.20	0.024	1.00	
Chrysene	ND	0.20	0.019	1.00	
Benzo (k) Fluoranthene	ND	0.20	0.023	1.00	
Benzo (b) Fluoranthene	ND	0.20	0.025	1.00	
Benzo (a) Pyrene	ND	0.20	0.036	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	0.022	1.00	
Dibenz (a,h) Anthracene	ND	0.20	0.027	1.00	
Benzo (g,h,i) Perylene	ND	0.20	0.022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	79	28-139	
2-Fluorobiphenyl	83	33-144	
p-Terphenyl-d14	83	23-160	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
		Units:	ug/L
Project: Colorado Lagoon			Page 5 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-280-139**	**N/A**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/14/17 22:52**	**170714L13**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.20	0.018	1.00	
Fluorene	ND	0.20	0.024	1.00	
Phenanthrene	ND	0.20	0.031	1.00	
Anthracene	ND	0.20	0.034	1.00	
Pyrene	ND	0.20	0.025	1.00	
Benzo (a) Anthracene	ND	0.20	0.024	1.00	
Chrysene	ND	0.20	0.019	1.00	
Benzo (k) Fluoranthene	ND	0.20	0.023	1.00	
Benzo (b) Fluoranthene	ND	0.20	0.025	1.00	
Benzo (a) Pyrene	ND	0.20	0.036	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	0.022	1.00	
Dibenz (a,h) Anthracene	ND	0.20	0.027	1.00	
Benzo (g,h,i) Perylene	ND	0.20	0.022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	107	28-139	
2-Fluorobiphenyl	101	33-144	
p-Terphenyl-d14	99	23-160	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 1 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SW-170713	**17-07-0701-1-G**	**07/13/17 10:35**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 15:28**	**170714L04**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.0019	0.00044	1.00	
PCB028	ND	0.0019	0.00051	1.00	
PCB037	ND	0.0019	0.00029	1.00	
PCB044	ND	0.0019	0.00068	1.00	
PCB049	ND	0.0019	0.00051	1.00	
PCB052	ND	0.0019	0.00053	1.00	
PCB066	ND	0.0019	0.00039	1.00	
PCB070	ND	0.0019	0.00040	1.00	
PCB074	ND	0.0019	0.00047	1.00	
PCB077	ND	0.0019	0.00060	1.00	
PCB081	ND	0.0019	0.00047	1.00	
PCB087	ND	0.0019	0.00068	1.00	
PCB099	ND	0.0019	0.00059	1.00	
PCB101	ND	0.0019	0.00048	1.00	
PCB105	ND	0.0019	0.00045	1.00	
PCB110	ND	0.0019	0.00032	1.00	
PCB114	ND	0.0019	0.00045	1.00	
PCB118	ND	0.0019	0.00048	1.00	
PCB119	ND	0.0019	0.00017	1.00	
PCB123	ND	0.0019	0.00080	1.00	
PCB126	ND	0.0019	0.00024	1.00	
PCB128	ND	0.0019	0.00042	1.00	
PCB132/153	ND	0.0038	0.00067	1.00	
PCB138/158	ND	0.0038	0.00057	1.00	
PCB149	ND	0.0019	0.00022	1.00	
PCB151	ND	0.0019	0.00039	1.00	
PCB156	ND	0.0019	0.00039	1.00	
PCB157	ND	0.0019	0.00039	1.00	
PCB167	ND	0.0019	0.00078	1.00	
PCB168	ND	0.0019	0.00050	1.00	
PCB169	ND	0.0019	0.00039	1.00	
PCB170	ND	0.0019	0.00041	1.00	
PCB177	ND	0.0019	0.00027	1.00	
PCB180	ND	0.0019	0.00058	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 2 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	ND	0.0019	0.00050	1.00	
PCB187	ND	0.0019	0.00041	1.00	
PCB189	ND	0.0019	0.00047	1.00	
PCB194	ND	0.0019	0.00024	1.00	
PCB201	ND	0.0019	0.00045	1.00	
PCB206	ND	0.0019	0.00041	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	94	50-150	
p-Terphenyl-d14	126	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 3 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SW-170713	**17-07-0701-2-T**	**07/13/17 11:30**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 15:52**	**170714L04**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.0019	0.00044	1.00	
PCB028	ND	0.0019	0.00051	1.00	
PCB037	ND	0.0019	0.00029	1.00	
PCB044	ND	0.0019	0.00068	1.00	
PCB049	ND	0.0019	0.00051	1.00	
PCB052	ND	0.0019	0.00053	1.00	
PCB066	ND	0.0019	0.00039	1.00	
PCB070	ND	0.0019	0.00040	1.00	
PCB074	ND	0.0019	0.00047	1.00	
PCB077	ND	0.0019	0.00060	1.00	
PCB081	ND	0.0019	0.00047	1.00	
PCB087	ND	0.0019	0.00068	1.00	
PCB099	ND	0.0019	0.00059	1.00	
PCB101	ND	0.0019	0.00048	1.00	
PCB105	ND	0.0019	0.00045	1.00	
PCB110	ND	0.0019	0.00032	1.00	
PCB114	ND	0.0019	0.00045	1.00	
PCB118	ND	0.0019	0.00048	1.00	
PCB119	ND	0.0019	0.00017	1.00	
PCB123	ND	0.0019	0.00080	1.00	
PCB126	ND	0.0019	0.00024	1.00	
PCB128	ND	0.0019	0.00042	1.00	
PCB132/153	ND	0.0038	0.00067	1.00	
PCB138/158	ND	0.0038	0.00057	1.00	
PCB149	ND	0.0019	0.00022	1.00	
PCB151	ND	0.0019	0.00039	1.00	
PCB156	ND	0.0019	0.00039	1.00	
PCB157	ND	0.0019	0.00039	1.00	
PCB167	ND	0.0019	0.00078	1.00	
PCB168	ND	0.0019	0.00050	1.00	
PCB169	ND	0.0019	0.00039	1.00	
PCB170	ND	0.0019	0.00041	1.00	
PCB177	ND	0.0019	0.00027	1.00	
PCB180	ND	0.0019	0.00058	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 4 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	ND	0.0019	0.00050	1.00	
PCB187	ND	0.0019	0.00041	1.00	
PCB189	ND	0.0019	0.00047	1.00	
PCB194	ND	0.0019	0.00024	1.00	
PCB201	ND	0.0019	0.00045	1.00	
PCB206	ND	0.0019	0.00041	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	82	50-150	
p-Terphenyl-d14	112	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 5 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SW-170713	**17-07-0701-3-G**	**07/13/17 11:00**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 16:16**	**170714L04**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.0019	0.00044	1.00	
PCB028	ND	0.0019	0.00051	1.00	
PCB037	ND	0.0019	0.00029	1.00	
PCB044	ND	0.0019	0.00068	1.00	
PCB049	ND	0.0019	0.00051	1.00	
PCB052	ND	0.0019	0.00053	1.00	
PCB066	ND	0.0019	0.00039	1.00	
PCB070	ND	0.0019	0.00040	1.00	
PCB074	ND	0.0019	0.00047	1.00	
PCB077	ND	0.0019	0.00060	1.00	
PCB081	ND	0.0019	0.00047	1.00	
PCB087	ND	0.0019	0.00068	1.00	
PCB099	ND	0.0019	0.00059	1.00	
PCB101	ND	0.0019	0.00048	1.00	
PCB105	ND	0.0019	0.00045	1.00	
PCB110	ND	0.0019	0.00032	1.00	
PCB114	ND	0.0019	0.00045	1.00	
PCB118	ND	0.0019	0.00048	1.00	
PCB119	ND	0.0019	0.00017	1.00	
PCB123	ND	0.0019	0.00080	1.00	
PCB126	ND	0.0019	0.00024	1.00	
PCB128	ND	0.0019	0.00042	1.00	
PCB132/153	ND	0.0038	0.00067	1.00	
PCB138/158	ND	0.0038	0.00057	1.00	
PCB149	ND	0.0019	0.00022	1.00	
PCB151	ND	0.0019	0.00039	1.00	
PCB156	ND	0.0019	0.00039	1.00	
PCB157	ND	0.0019	0.00039	1.00	
PCB167	ND	0.0019	0.00078	1.00	
PCB168	ND	0.0019	0.00050	1.00	
PCB169	ND	0.0019	0.00039	1.00	
PCB170	ND	0.0019	0.00041	1.00	
PCB177	ND	0.0019	0.00027	1.00	
PCB180	ND	0.0019	0.00058	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 6 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	ND	0.0019	0.00050	1.00	
PCB187	ND	0.0019	0.00041	1.00	
PCB189	ND	0.0019	0.00047	1.00	
PCB194	ND	0.0019	0.00024	1.00	
PCB201	ND	0.0019	0.00045	1.00	
PCB206	ND	0.0019	0.00041	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	83	50-150	
p-Terphenyl-d14	111	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 7 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SW-170713	**17-07-0701-4-G**	**07/13/17 09:20**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 16:41**	**170714L04**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.0019	0.00044	1.00	
PCB028	ND	0.0019	0.00050	1.00	
PCB037	ND	0.0019	0.00029	1.00	
PCB044	ND	0.0019	0.00068	1.00	
PCB049	ND	0.0019	0.00050	1.00	
PCB052	ND	0.0019	0.00053	1.00	
PCB066	ND	0.0019	0.00038	1.00	
PCB070	ND	0.0019	0.00039	1.00	
PCB074	ND	0.0019	0.00046	1.00	
PCB077	ND	0.0019	0.00059	1.00	
PCB081	ND	0.0019	0.00046	1.00	
PCB087	ND	0.0019	0.00068	1.00	
PCB099	ND	0.0019	0.00058	1.00	
PCB101	ND	0.0019	0.00047	1.00	
PCB105	ND	0.0019	0.00044	1.00	
PCB110	ND	0.0019	0.00032	1.00	
PCB114	ND	0.0019	0.00044	1.00	
PCB118	ND	0.0019	0.00048	1.00	
PCB119	ND	0.0019	0.00016	1.00	
PCB123	ND	0.0019	0.00079	1.00	
PCB126	ND	0.0019	0.00024	1.00	
PCB128	ND	0.0019	0.00041	1.00	
PCB132/153	ND	0.0038	0.00066	1.00	
PCB138/158	ND	0.0038	0.00057	1.00	
PCB149	ND	0.0019	0.00022	1.00	
PCB151	ND	0.0019	0.00039	1.00	
PCB156	ND	0.0019	0.00038	1.00	
PCB157	ND	0.0019	0.00039	1.00	
PCB167	ND	0.0019	0.00077	1.00	
PCB168	ND	0.0019	0.00049	1.00	
PCB169	ND	0.0019	0.00038	1.00	
PCB170	ND	0.0019	0.00040	1.00	
PCB177	ND	0.0019	0.00026	1.00	
PCB180	ND	0.0019	0.00057	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 8 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	ND	0.0019	0.00050	1.00	
PCB187	ND	0.0019	0.00041	1.00	
PCB189	ND	0.0019	0.00046	1.00	
PCB194	ND	0.0019	0.00024	1.00	
PCB201	ND	0.0019	0.00045	1.00	
PCB206	ND	0.0019	0.00041	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	73	50-150	
p-Terphenyl-d14	99	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 9 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-414-104**	**N/A**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 11:52**	**170714L04**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.0020	0.00046	1.00	
PCB028	ND	0.0020	0.00053	1.00	
PCB037	ND	0.0020	0.00030	1.00	
PCB044	ND	0.0020	0.00071	1.00	
PCB049	ND	0.0020	0.00053	1.00	
PCB052	ND	0.0020	0.00056	1.00	
PCB066	ND	0.0020	0.00040	1.00	
PCB070	ND	0.0020	0.00041	1.00	
PCB074	ND	0.0020	0.00049	1.00	
PCB077	ND	0.0020	0.00062	1.00	
PCB081	ND	0.0020	0.00048	1.00	
PCB087	ND	0.0020	0.00071	1.00	
PCB099	ND	0.0020	0.00061	1.00	
PCB101	ND	0.0020	0.00050	1.00	
PCB105	ND	0.0020	0.00047	1.00	
PCB110	ND	0.0020	0.00034	1.00	
PCB114	ND	0.0020	0.00047	1.00	
PCB118	ND	0.0020	0.00050	1.00	
PCB119	ND	0.0020	0.00017	1.00	
PCB123	ND	0.0020	0.00083	1.00	
PCB126	ND	0.0020	0.00025	1.00	
PCB128	ND	0.0020	0.00043	1.00	
PCB132/153	ND	0.0040	0.00069	1.00	
PCB138/158	ND	0.0040	0.00060	1.00	
PCB149	ND	0.0020	0.00023	1.00	
PCB151	ND	0.0020	0.00040	1.00	
PCB156	ND	0.0020	0.00040	1.00	
PCB157	ND	0.0020	0.00041	1.00	
PCB167	ND	0.0020	0.00081	1.00	
PCB168	ND	0.0020	0.00052	1.00	
PCB169	ND	0.0020	0.00040	1.00	
PCB170	ND	0.0020	0.00042	1.00	
PCB177	ND	0.0020	0.00028	1.00	
PCB180	ND	0.0020	0.00060	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/L
Project: Colorado Lagoon			Page 10 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	ND	0.0020	0.00052	1.00	
PCB187	ND	0.0020	0.00043	1.00	
PCB189	ND	0.0020	0.00049	1.00	
PCB194	ND	0.0020	0.00025	1.00	
PCB201	ND	0.0020	0.00047	1.00	
PCB206	ND	0.0020	0.00043	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	88	50-150	
p-Terphenyl-d14	113	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 350.1
Project: Colorado Lagoon			Page 1 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717S02**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717S02**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717S02**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Ammonia (as N)	ND	0.5000	0.5546	111	0.5593	112	90-110	1	0-25	3

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 351.2
Project: Colorado Lagoon			Page 2 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS1-SW-170713	**Sample**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718S02**
WS1-SW-170713	**Matrix Spike**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718S02**
WS1-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718S02**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Total Kjeldahl Nitrogen	0.3533	1.000	1.255	90	1.237	88	90-110	1	0-20	3

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 365.1
Project: Colorado Lagoon			Page 3 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714S01**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714S01**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Phosphorus, Total	0.06408	0.2000	0.2453	91	0.2452	91	90-110	0	0-25	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 365.1 (M)
Project: Colorado Lagoon			Page 4 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714S02**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714S02**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714S02**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
o-Phosphate (as P)	ND	0.2000	0.2212	111	0.2228	111	90-110	1	0-25	3

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 4500-NO3 E/SM 4500-NO2 B
Project: Colorado Lagoon			Page 5 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3S1**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3S1**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3S1**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	ND	0.5000	0.5579	112	0.5612	112	70-130	1	0-25	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3005A Total
		Method:	EPA 1640
Project: Colorado Lagoon			Page 6 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/20/17 22:26**	**170717S01**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/31/17 19:34**	**170717S01**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/31/17 19:41**	**170717S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	0.3880	0.5000	0.8823	99	0.8239	87	50-150	7	0-20	
Zinc	3.195	5.000	12.27	182	12.67	190	50-150	3	0-20	3

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
Project: Colorado Lagoon			Page 7 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 15:15**	**170720S02**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 16:03**	**170720S02**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 16:37**	**170720S02**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alpha Chlordane	ND	0.05000	0.04813	96	0.04502	90	25-200	7	0-25	
4,4'-DDD	ND	0.05000	0.06363	127	0.06139	123	25-200	4	0-25	
4,4'-DDE	ND	0.05000	0.05253	105	0.04916	98	25-200	7	0-25	
4,4'-DDT	ND	0.05000	0.02334	47	0.02451	49	25-200	5	0-25	
Dieldrin	ND	0.05000	0.05728	115	0.05233	105	25-200	9	0-25	
Gamma Chlordane	ND	0.05000	0.05255	105	0.04995	100	25-200	5	0-25	
Heptachlor	ND	0.05000	0.04841	97	0.04380	88	25-200	10	0-25	
Heptachlor Epoxide	ND	0.05000	0.05397	108	0.05180	104	25-200	4	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
Project: Colorado Lagoon			Page 8 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
17-07-0783-1	**Sample**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/14/17 23:31**	**170714S13**
17-07-0783-1	**Matrix Spike**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/15/17 00:29**	**170714S13**
17-07-0783-1	**Matrix Spike Duplicate**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/15/17 00:48**	**170714S13**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acenaphthylene	ND	2.000	1.609	80	1.620	81	33-145	1	0-25	
Fluorene	ND	2.000	1.786	89	1.764	88	59-121	1	0-25	
Phenanthrene	ND	2.000	1.918	96	1.909	95	54-120	0	0-25	
Anthracene	ND	2.000	1.771	89	1.780	89	27-133	0	0-25	
Pyrene	ND	2.000	1.880	94	1.909	95	18-168	2	0-25	
Benzo (a) Anthracene	ND	2.000	1.769	88	1.783	89	33-143	1	0-25	
Chrysene	ND	2.000	1.801	90	1.816	91	17-168	1	0-25	
Benzo (k) Fluoranthene	ND	2.000	1.820	91	1.824	91	24-159	0	0-25	
Benzo (b) Fluoranthene	ND	2.000	1.751	88	1.740	87	24-159	1	0-25	
Benzo (a) Pyrene	ND	2.000	1.722	86	1.758	88	17-163	2	0-25	
Indeno (1,2,3-c,d) Pyrene	ND	2.000	1.643	82	1.636	82	10-171	0	0-25	
Dibenz (a,h) Anthracene	ND	2.000	1.713	86	1.739	87	10-219	2	0-25	
Benzo (g,h,i) Perylene	ND	2.000	1.635	82	1.685	84	10-227	3	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
Project: Colorado Lagoon			Page 9 of 9

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS2-SW-170713	**Sample**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 15:52**	**170714S04A**
WS2-SW-170713	**Matrix Spike**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 22:16**	**170714S04A**
WS2-SW-170713	**Matrix Spike Duplicate**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 14:40**	**170714S04A**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
PCB018	ND	0.5000	0.3562	71	0.3550	71	50-150	0	0-25	
PCB028	ND	0.5000	0.4074	81	0.3874	77	50-150	5	0-25	
PCB044	ND	0.5000	0.4030	81	0.3980	80	50-150	1	0-25	
PCB052	ND	0.5000	0.3537	71	0.3542	71	50-150	0	0-25	
PCB066	ND	0.5000	0.4508	90	0.4492	90	50-150	0	0-25	
PCB077	ND	0.5000	0.4550	91	0.4469	89	50-150	2	0-25	
PCB101	ND	0.5000	0.4096	82	0.4122	82	50-150	1	0-25	
PCB105	ND	0.5000	0.4781	96	0.4650	93	50-150	3	0-25	
PCB118	ND	0.5000	0.4765	95	0.4738	95	50-150	1	0-25	
PCB126	ND	0.5000	0.4719	94	0.4474	89	50-150	5	0-25	
PCB128	ND	0.5000	0.4569	91	0.4294	86	50-150	6	0-25	
PCB170	ND	0.5000	0.4398	88	0.4042	81	50-150	8	0-25	
PCB180	ND	0.5000	0.5244	105	0.4715	94	50-150	11	0-25	
PCB187	ND	0.5000	0.5130	103	0.4495	90	50-150	13	0-25	
PCB206	ND	0.5000	0.4297	86	0.4025	80	50-150	7	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 2540 D
Project: Colorado Lagoon			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
17-07-0721-2	**Sample**	**Aqueous**	**N/A**	**07/20/17 00:00**	**07/20/17 14:00**	**H0720TSSD1**
17-07-0721-2	**Sample Duplicate**	**Aqueous**	**N/A**	**07/20/17 00:00**	**07/20/17 14:00**	**H0720TSSD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total Suspended	560.0	542.0	3	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 350.1
Project: Colorado Lagoon			Page 1 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-735-357	**LCS**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**
099-12-735-357	**LCSD**	**Aqueous**	**ACA 1**	**N/A**	**07/17/17 18:45**	**170717L02**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Ammonia (as N)	0.5000	0.4778	96	0.4818	96	90-110	1	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 351.2
Project: Colorado Lagoon			Page 2 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-741-279	**LCS**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**
099-12-741-279	**LCSD**	**Aqueous**	**ACA 1**	**N/A**	**07/18/17 17:33**	**170718L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Total Kjeldahl Nitrogen	1.000	0.9510	95	0.9457	95	90-110	1	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 365.1
Project: Colorado Lagoon			Page 3 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-739-192	**LCS**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**
099-12-739-192	**LCSD**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 16:05**	**170714L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Phosphorus, Total	0.2000	0.1989	99	0.2001	100	90-110	1	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 365.1 (M)
Project: Colorado Lagoon			Page 4 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-737-112	**LCS**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**
099-12-737-112	**LCSD**	**Aqueous**	**ACA 1**	**N/A**	**07/14/17 12:33**	**170714L02**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
o-Phosphate (as P)	0.2000	0.1903	95	0.1902	95	90-110	0	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 2540 D
Project: Colorado Lagoon			Page 5 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-09-010-8456	**LCS**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**
099-09-010-8456	**LCSD**	**Aqueous**	**N/A**	**07/20/17**	**07/20/17 14:00**	**H0720TSSL1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Suspended	100.0	86.00	86	87.00	87	80-120	1	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 4500-NO3 E/SM 4500-NO2 B
Project: Colorado Lagoon			Page 6 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-04-011-1575	**LCS**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**
099-04-011-1575	**LCSD**	**Aqueous**	**UV 7**	**07/14/17**	**07/14/17 17:58**	**H0714NO3L1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	0.5000	0.5059	101	0.5113	102	80-120	1	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3005A Total
		Method:	EPA 1640
Project: Colorado Lagoon			Page 7 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-13-067-717	**LCS**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/19/17 13:55**	**170717L01**
099-13-067-717	**LCSD**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/19/17 14:02**	**170717L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	0.5000	0.4573	91	0.4307	86	70-130	6	0-20	
Zinc	5.000	5.889	118	5.119	102	70-130	14	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3005A Filt.
		Method:	EPA 1640
Project: Colorado Lagoon			Page 8 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-823-280	**LCS**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/19/17 13:55**	**170717L01F**
099-15-823-280	**LCSD**	**Aqueous**	**ICP/MS 06**	**07/17/17**	**07/19/17 14:02**	**170717L01F**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	0.5000	0.4573	91	0.4307	86	70-130	6	0-20	
Zinc	5.000	5.889	118	5.119	102	70-130	14	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C PEST-SIM
Project: Colorado Lagoon			Page 9 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-186-39	**LCS**	**Aqueous**	**GC/MS BBB**	**07/20/17**	**07/25/17 13:39**	**170720L02**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Alpha Chlordane	0.05000	0.05525	111	25-200	
4,4'-DDD	0.05000	0.06748	135	25-200	
4,4'-DDE	0.05000	0.06488	130	25-200	
4,4'-DDT	0.05000	0.06417	128	25-200	
Dieldrin	0.05000	0.06296	126	25-200	
Gamma Chlordane	0.05000	0.05975	119	25-200	
Heptachlor	0.05000	0.05736	115	25-200	
Heptachlor Epoxide	0.05000	0.06508	130	25-200	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

eurofins | Calscience

Quality Control - LCS

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PAHs
Project: Colorado Lagoon			Page 10 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-14-280-139	**LCS**	**Aqueous**	**GC/MS AAA**	**07/14/17**	**07/14/17 23:11**	**170714L13**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Acenaphthylene	2.000	1.466	73	33-145	14-164	
Fluorene	2.000	1.547	77	59-121	49-131	
Phenanthrene	2.000	1.678	84	54-120	43-131	
Anthracene	2.000	1.607	80	27-133	9-151	
Pyrene	2.000	1.742	87	45-129	31-143	
Benzo (a) Anthracene	2.000	1.649	82	33-143	15-161	
Chrysene	2.000	1.651	83	17-168	0-193	
Benzo (k) Fluoranthene	2.000	1.595	80	24-159	2-182	
Benzo (b) Fluoranthene	2.000	1.802	90	24-159	2-182	
Benzo (a) Pyrene	2.000	1.613	81	17-163	0-187	
Indeno (1,2,3-c,d) Pyrene	2.000	1.497	75	25-175	0-200	
Dibenz (a,h) Anthracene	2.000	1.582	79	25-175	0-200	
Benzo (g,h,i) Perylene	2.000	1.500	75	25-157	3-179	

Total number of LCS compounds: 13
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

ANCHOR QEA, LLC		Date Received:	07/13/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0701
Mission Viejo, CA 92691-8306		Preparation:	EPA 3510C
		Method:	EPA 8270C SIM PCB Congeners
Project: Colorado Lagoon			Page 11 of 11

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-414-104	**LCS**	**Aqueous**	**GC/MS HHH**	**07/14/17**	**07/17/17 12:16**	**170714L04**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
PCB018	0.5000	0.3674	73	50-150	33-167	
PCB028	0.5000	0.3967	79	50-150	33-167	
PCB044	0.5000	0.4105	82	50-150	33-167	
PCB052	0.5000	0.3642	73	50-150	33-167	
PCB066	0.5000	0.4612	92	50-150	33-167	
PCB077	0.5000	0.4521	90	50-150	33-167	
PCB101	0.5000	0.4179	84	50-150	33-167	
PCB105	0.5000	0.4821	96	50-150	33-167	
PCB118	0.5000	0.4815	96	50-150	33-167	
PCB126	0.5000	0.4594	92	50-150	33-167	
PCB128	0.5000	0.4443	89	50-150	33-167	
PCB170	0.5000	0.4180	84	50-150	33-167	
PCB180	0.5000	0.4893	98	50-150	33-167	
PCB187	0.5000	0.4584	92	50-150	33-167	
PCB206	0.5000	0.3613	72	50-150	33-167	

Total number of LCS compounds: 15
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Glossary of Terms and Qualifiers

Work Order: 17-07-0701 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Return to Contents

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7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY: **17-07-0701**

DATE: 7/13/17 ~~02/23/17~~

PAGE: 1 OF 1

LABORATORY CLIENT: Anchor QEA

ADDRESS: 27201 Puerta Real, Suite 350

CITY: Mission Viejo STATE: CA ZIP: 92691

TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Colorado Lagoon /

P.O. NO.: 160548-07.02

PROJECT CONTACT: Chris Osuch

SAMPLER(S): (PRINT) C. Dolphin, N. Kennedy

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

Report down to the MDL

Filter dissolved metals samples upon receipt

Analyze SRM with metals and organics (if available)

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	EPA 1640/7470A Total Pb,Zn	EPA 1640/7470A Dissolved Pb,Zn	EPA 8270C SIM PCB Congeners	EPA 8270C SIM PAHs	EPA 8270C SIM Pesticides	SM 2540 D TSS	EPA 365.1(M)-Orthophosphate-P	EPA 365.1 - Total Phosphorus	EPA 350.1 - Total Ammonia	EPA 351.2 - TKN	SM4500-NO3E/NO2B-Nitrate	MS/MSD
1	WS1-SW-170~~223~~713	7/13/17	1035	Water	10	X	X		X	X	X	X	X	X	X	X	X	X	X	
2	WS2-SW-170~~223~~713	↓	1130	Water	22	X	X		X	X	X	X	X	X	X	X	X	X	X	X
3	WS3-SW-170~~223~~713		1100	Water	10	X	X		X	X	X	X	X	X	X	X	X	X	X	
4	WS4-SW-~~170223~~ -170713		0920	Water	10	X	X		X	X	X	X	X	X	X	X	X	X	X	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
[signature]	[signature] ECT	7/13/17	1300
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision

Return to Contents

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WORK ORDER NUMBER: 17-07- 0701

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 34

CLIENT: Anchor

DATE: 07 / 13 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 3.0 °C (w/ CF): 3.2 °C; ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 802

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 802
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 1140

SAMPLE CONDITION:

	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☐	☑	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☑ 250CGB**s** ☑ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☑ 1AGB ☐ 1AGB**na$_2$** ☑ 1AGB**s** ☑ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1140

Reviewed by: [illegible]

Return to Contents

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WORK ORDER NUMBER: 17-07- 0701

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 34

CLIENT: Anchor

DATE: 07 / 13 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 3.3 °C (w/ CF): 3.5 °C; ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 802

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 802
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 1140

SAMPLE CONDITION:

	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☑ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☑ 1AGB ☐ 1AGB**na$_2$** ☑ 1AGB**s** ☑ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: TJ

Return to Contents

eurofins | Calscience

WORK ORDER NUMBER: 17-07- 0701

SAMPLE RECEIPT CHECKLIST

COOLER 3 OF 34

CLIENT: Anchor

DATE: 07 / 13 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.8 °C; ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 802

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 802
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 1140

SAMPLE CONDITION:

	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☑ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☑ 1AGB ☐ 1AGB**na$_2$** ☑ 1AGB**s** ☑ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1140

Reviewed by: 78

Return to Contents

eurofins | Calscience

WORK ORDER NUMBER: 17-07- 0701

SAMPLE RECEIPT CHECKLIST

COOLER 4 OF 4

CLIENT: Anchor

DATE: 07 / 13 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 3.3 °C (w/ CF): 3.5 °C; ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 15

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 15
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 1140

SAMPLE CONDITION:

	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: **(Trip Blank Lot Number: _____)**

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☑ 250CGB**s** ☑ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☑ 1AGB ☐ 1AGB**na$_2$** ☑ 1AGB**s** ☑ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: 778

Return to Contents

eurofins | Calscience

WORK ORDER NUMBER: 17-07- 0701

SAMPLE ANOMALY REPORT

DATE: 07 / 13 / 2017

SAMPLES, CONTAINERS, AND LABELS:

- ☐ Sample(s) NOT RECEIVED but listed on COC
- ☐ Sample(s) received but NOT LISTED on COC
- ☐ Holding time expired (list client or ECI sample ID and analysis)
- ☐ Insufficient sample amount for requested analysis (list analysis)
- ☐ Improper container(s) used (list analysis)
- ☐ Improper preservative used (list analysis)
- ☐ No preservative noted on COC or label (list analysis and notify lab)
- ☐ Sample container(s) not labeled
- ☐ Client sample label(s) illegible (list container type and analysis)
- ☑ Client sample label(s) do not match COC (comment)
  - ☐ Project information
  - ☑ Client sample ID
  - ☐ Sampling date and/or time
  - ☐ Number of container(s)
  - ☐ Requested analysis
- ☐ Sample container(s) compromised (comment)
  - ☐ Broken
  - ☐ Water present in sample container
- ☐ Air sample container(s) compromised (comment)
  - ☐ Flat
  - ☐ Very low in volume
  - ☐ Leaking (not transferred; duplicate bag submitted)
  - ☐ Leaking (transferred into ECI Tedlar™ bags*)
  - ☐ Leaking (transferred into client's Tedlar™ bags*)

* Transferred at client's request.

Comments

(-2) 2 of 3 containers for PCB's labeled WS2-SW-170516 date / time matched.

MISCELLANEOUS: (Describe)

Comments

HEADSPACE:

(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)

ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**

(Containers with bubble for other analysis)

ECI Sample ID	ECI Container ID	Total Number**	Requested Analysis

Comments:

Reported by: 1140

Reviewed by: TB

** Record the total number of containers (i.e., vials or bottles) for the affected sample.

Return to Contents

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WORK ORDER NUMBER: 17-07-0331

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: ANCHOR QEA, LLC

Client Project Name: Colorado Lagoon TMDL / 160548-07.02

Attention: Chris Osuch
27201 Puerta Real
Suite 350
Mission Viejo, CA 92691-8306

Kathleen M. Burney FOR

Approved for release on 07/26/2017 by:
Carla Hollowell
Project Manager

ResultLink

Email your PM

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Contents

Client Project Name: Colorado Lagoon TMDL / 160548-07.02
Work Order Number: 17-07-0331

1 Work Order Narrative. 3

2 Sample Summary. 4

3 Client Sample Data. 5
3.1 EPA 9060A Total Organic Carbon (Solid). 5
3.2 SM 2540 B (M) Total Solids (Solid). 6
3.3 EPA 6020 ICP/MS Metals (Solid). 7
3.4 EPA 7471A Mercury (Solid). 9
3.5 ASTM D4464 (M) Particle Size Laser (Solid). 10
3.6 EPA 8270C SIM OC Pesticides (Solid). 12
3.7 EPA 8270C SIM PAHs (Solid). 17
3.8 EPA 8270C SIM PCB Congeners (Solid). 22

4 Particle Size Summary - 17-07-0331. 32

5 Quality Control Sample Data. 36
5.1 MS/MSD. 36
5.2 PDS/PDSD. 42
5.3 Sample Duplicate. 43
5.4 LCS/LCSD. 44

6 Glossary of Terms and Qualifiers. 50

7 Chain-of-Custody/Sample Receipt Form. 51

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Work Order Narrative

Work Order: 17-07-0331 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/07/17. They were assigned to Work Order 17-07-0331.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Return to Contents

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Sample Summary

Client:	ANCHOR QEA, LLC 27201 Puerta Real, Suite 350 Mission Viejo, CA 92691-8306	Work Order:	17-07-0331
		Project Name:	Colorado Lagoon TMDL / 160548-07.02
		PO Number:	CO-032117
		Date/Time Received:	07/07/17 19:00
		Number of Containers:	13
Attn:	Chris Osuch		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
WS1-SS-170706	17-07-0331-1	07/06/17 13:29	3	Sediment
WS2-SS-170706	17-07-0331-2	07/06/17 17:43	4	Sediment
WS3-SS-170706	17-07-0331-3	07/06/17 15:35	3	Sediment
WS4-SS-170706	17-07-0331-4	07/06/17 09:00	3	Sediment

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 9060A
		Units:	%
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-BB**	**07/06/17 13:29**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 14:34**	**H0724TOCL1**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	1.9	0.13	0.044	1.00	

WS2-SS-170706	**17-07-0331-2-BB**	**07/06/17 17:43**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 14:34**	**H0724TOCL1**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	0.49	0.088	0.031	1.00	

WS3-SS-170706	**17-07-0331-3-BB**	**07/06/17 15:35**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 14:34**	**H0724TOCL1**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	1.1	0.11	0.039	1.00	

WS4-SS-170706	**17-07-0331-4-BB**	**07/06/17 09:00**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 14:34**	**H0724TOCL1**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	3.5	0.12	0.043	1.00	

Method Blank	**099-06-013-1728**	**N/A**	**Solid**	**TOC 9**	**07/24/17**	**07/24/17 12:15**	**H0724TOCL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Carbon, Total Organic	ND	0.050	0.017	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 2540 B (M)
		Units:	%
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-BB**	**07/06/17 13:29**	**Sediment**	**N/A**	**07/12/17**	**07/12/17 17:00**	**H0712TSB2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	39.3	0.100	0.100	1.00	

WS2-SS-170706	**17-07-0331-2-BB**	**07/06/17 17:43**	**Sediment**	**N/A**	**07/12/17**	**07/12/17 17:00**	**H0712TSB2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	56.8	0.100	0.100	1.00	

WS3-SS-170706	**17-07-0331-3-BB**	**07/06/17 15:35**	**Sediment**	**N/A**	**07/12/17**	**07/12/17 17:00**	**H0712TSB2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	44.5	0.100	0.100	1.00	

WS4-SS-170706	**17-07-0331-4-BB**	**07/06/17 09:00**	**Sediment**	**N/A**	**07/12/17**	**07/12/17 17:00**	**H0712TSB2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	40.3	0.100	0.100	1.00	

Method Blank	**099-05-019-3711**	**N/A**	**Solid**	**N/A**	**07/12/17**	**07/12/17 17:00**	**H0712TSB2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total	ND	0.100	0.100	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-AA**	**07/06/17 13:29**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:49**	**170719L01E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.551	0.254	0.146	1.00	
Copper	47.8	0.254	0.107	1.00	
Lead	35.1	0.254	0.168	1.00	
Zinc	179	2.54	2.02	1.00	

WS2-SS-170706	**17-07-0331-2-AA**	**07/06/17 17:43**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:23**	**170719L01E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.281	0.176	0.101	1.00	
Copper	38.7	0.176	0.0738	1.00	
Lead	17.0	0.176	0.116	1.00	
Zinc	102	1.76	1.40	1.00	

WS3-SS-170706	**17-07-0331-3-AA**	**07/06/17 15:35**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:33**	**170719L01E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.368	0.225	0.129	1.00	
Copper	36.9	0.225	0.0942	1.00	
Lead	18.7	0.225	0.148	1.00	
Zinc	109	2.25	1.79	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SS-170706	**17-07-0331-4-AA**	**07/06/17 09:00**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:36**	**170719L01E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.753	0.248	0.142	1.00	
Copper	93.7	0.248	0.104	1.00	
Lead	77.4	0.248	0.164	1.00	
Zinc	385	2.48	1.97	1.00	

Method Blank	**099-15-254-526**	**N/A**	**Solid**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:44**	**170719L01E**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.100	0.0572	1.00	
Copper	ND	0.100	0.0419	1.00	
Lead	ND	0.100	0.0659	1.00	
Zinc	ND	1.00	0.795	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 7471A Total
		Method:	EPA 7471A
		Units:	mg/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-AA**	**07/06/17 13:29**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:07**	**170719L03E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.0982	0.0526	0.0155	1.00	

WS2-SS-170706	**17-07-0331-2-AA**	**07/06/17 17:43**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:14**	**170719L03E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.0299	0.0371	0.0109	1.00	J

WS3-SS-170706	**17-07-0331-3-AA**	**07/06/17 15:35**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:16**	**170719L03E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.0639	0.0449	0.0132	1.00	

WS4-SS-170706	**17-07-0331-4-AA**	**07/06/17 09:00**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:19**	**170719L03E**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.0816	0.0505	0.0148	1.00	

Method Blank	**099-16-278-329**	**N/A**	**Solid**	**Mercury 07**	**07/19/17**	**07/19/17 17:03**	**170719L03E**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.0207	0.00607	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	ASTM D4464 (M)
		Units:	%
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-C**	**07/06/17 13:29**	**Sediment**	**LPSA 1**	**N/A**	**07/14/17 15:07**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	14.62	
Silt (0.00391 to 0.0625mm)	64.72	
Total Silt and Clay (0 to 0.0625mm)	79.34	
Very Fine Sand (0.0625 to 0.125mm)	9.73	
Fine Sand (0.125 to 0.25mm)	10.70	
Medium Sand (0.25 to 0.5mm)	0.22	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

WS2-SS-170706	**17-07-0331-2-D**	**07/06/17 17:43**	**Sediment**	**LPSA 1**	**N/A**	**07/14/17 15:25**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	11.90	
Silt (0.00391 to 0.0625mm)	61.09	
Total Silt and Clay (0 to 0.0625mm)	72.98	
Very Fine Sand (0.0625 to 0.125mm)	19.00	
Fine Sand (0.125 to 0.25mm)	8.01	
Medium Sand (0.25 to 0.5mm)	0.010	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

WS3-SS-170706	**17-07-0331-3-C**	**07/06/17 15:35**	**Sediment**	**LPSA 1**	**N/A**	**07/14/17 15:31**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	17.23	
Silt (0.00391 to 0.0625mm)	71.53	
Total Silt and Clay (0 to 0.0625mm)	88.76	
Very Fine Sand (0.0625 to 0.125mm)	7.57	
Fine Sand (0.125 to 0.25mm)	3.67	
Medium Sand (0.25 to 0.5mm)	ND	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	ASTM D4464 (M)
		Units:	%
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SS-170706	**17-07-0331-4-C**	**07/06/17 09:00**	**Sediment**	**LPSA 1**	**N/A**	**07/14/17 15:37**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	4.35	
Silt (0.00391 to 0.0625mm)	28.30	
Total Silt and Clay (0 to 0.0625mm)	32.65	
Very Fine Sand (0.0625 to 0.125mm)	13.90	
Fine Sand (0.125 to 0.25mm)	24.10	
Medium Sand (0.25 to 0.5mm)	13.80	
Coarse Sand (0.5 to 1mm)	10.30	
Very Coarse Sand (1 to 2mm)	5.24	
Gravel (greater than 2mm)	ND	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-AA**	**07/06/17 13:29**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 19:31**	**170711L17**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	2.3	0.50	0.17	1.00	
Cis-nonachlor	1.1	0.50	0.13	1.00	
2,4'-DDD	ND	0.50	0.19	1.00	
2,4'-DDE	ND	0.50	0.089	1.00	
2,4'-DDT	ND	0.50	0.16	1.00	
4,4'-DDD	ND	0.50	0.10	1.00	
4,4'-DDE	ND	0.50	0.10	1.00	
4,4'-DDT	ND	0.50	0.13	1.00	
Dieldrin	ND	0.50	0.27	1.00	
Gamma Chlordane	2.6	0.50	0.13	1.00	
Heptachlor	ND	0.50	0.13	1.00	
Heptachlor Epoxide	ND	0.50	0.11	1.00	
Oxychlordane	ND	0.50	0.18	1.00	
Trans-nonachlor	1.9	0.50	0.11	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	85	25-200	
2,4,5,6-Tetrachloro-m-Xylene	73	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SS-170706	**17-07-0331-2-AA**	**07/06/17 17:43**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 19:47**	**170711L17**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.35	0.12	1.00	
Cis-nonachlor	ND	0.35	0.088	1.00	
2,4'-DDD	ND	0.35	0.13	1.00	
2,4'-DDE	ND	0.35	0.061	1.00	
2,4'-DDT	ND	0.35	0.11	1.00	
4,4'-DDD	ND	0.35	0.069	1.00	
4,4'-DDE	ND	0.35	0.070	1.00	
4,4'-DDT	ND	0.35	0.091	1.00	
Dieldrin	ND	0.35	0.18	1.00	
Gamma Chlordane	ND	0.35	0.093	1.00	
Heptachlor	ND	0.35	0.089	1.00	
Heptachlor Epoxide	ND	0.35	0.077	1.00	
Oxychlordane	ND	0.35	0.13	1.00	
Trans-nonachlor	ND	0.35	0.075	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	52	25-200	
2,4,5,6-Tetrachloro-m-Xylene	67	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 3 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SS-170706	**17-07-0331-3-AA**	**07/06/17 15:35**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 20:03**	**170711L17**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	0.96	0.44	0.15	1.00	
Cis-nonachlor	0.54	0.44	0.11	1.00	
2,4'-DDD	ND	0.44	0.17	1.00	
2,4'-DDE	ND	0.44	0.078	1.00	
2,4'-DDT	ND	0.44	0.14	1.00	
4,4'-DDD	ND	0.44	0.089	1.00	
4,4'-DDE	ND	0.44	0.090	1.00	
4,4'-DDT	ND	0.44	0.12	1.00	
Dieldrin	ND	0.44	0.24	1.00	
Gamma Chlordane	0.94	0.44	0.12	1.00	
Heptachlor	ND	0.44	0.11	1.00	
Heptachlor Epoxide	ND	0.44	0.099	1.00	
Oxychlordane	ND	0.44	0.16	1.00	
Trans-nonachlor	0.79	0.44	0.096	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	54	25-200	
2,4,5,6-Tetrachloro-m-Xylene	70	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 4 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SS-170706	**17-07-0331-4-AA**	**07/06/17 09:00**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 20:19**	**170711L17**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	15	0.49	0.16	1.00	
Cis-nonachlor	3.6	0.49	0.12	1.00	
2,4'-DDD	ND	0.49	0.19	1.00	
2,4'-DDE	ND	0.49	0.086	1.00	
2,4'-DDT	ND	0.49	0.15	1.00	
4,4'-DDD	ND	0.49	0.098	1.00	
4,4'-DDE	ND	0.49	0.099	1.00	
4,4'-DDT	ND	0.49	0.13	1.00	
Dieldrin	ND	0.49	0.26	1.00	
Gamma Chlordane	11	0.49	0.13	1.00	
Heptachlor	ND	0.49	0.13	1.00	
Heptachlor Epoxide	ND	0.49	0.11	1.00	
Oxychlordane	ND	0.49	0.18	1.00	
Trans-nonachlor	11	0.49	0.11	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	62	25-200	
2,4,5,6-Tetrachloro-m-Xylene	71	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 5 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-154-79**	**N/A**	**Solid**	**GC/MS BBB**	**07/11/17**	**07/19/17 17:41**	**170711L17**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.20	0.066	1.00	
Cis-nonachlor	ND	0.20	0.050	1.00	
2,4'-DDD	ND	0.20	0.075	1.00	
2,4'-DDE	ND	0.20	0.034	1.00	
2,4'-DDT	ND	0.20	0.061	1.00	
4,4'-DDD	ND	0.20	0.039	1.00	
4,4'-DDE	ND	0.20	0.040	1.00	
4,4'-DDT	ND	0.20	0.052	1.00	
Dieldrin	ND	0.20	0.10	1.00	
Gamma Chlordane	ND	0.20	0.052	1.00	
Heptachlor	ND	0.20	0.050	1.00	
Heptachlor Epoxide	ND	0.20	0.044	1.00	
Oxychlordane	ND	0.20	0.071	1.00	
Trans-nonachlor	ND	0.20	0.042	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	87	25-200	
2,4,5,6-Tetrachloro-m-Xylene	83	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-AA**	**07/06/17 13:29**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/17/17 20:07**	**170714L15**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	25	5.9	1.00	
Acenaphthylene	ND	25	4.5	1.00	
Anthracene	ND	25	8.8	1.00	
Benzo (a) Anthracene	18	25	5.4	1.00	J
Benzo (a) Pyrene	16	25	4.6	1.00	J
Benzo (b) Fluoranthene	32	25	6.9	1.00	
Benzo (e) Pyrene	33	25	5.0	1.00	
Benzo (g,h,i) Perylene	36	25	3.9	1.00	
Benzo (k) Fluoranthene	18	25	7.0	1.00	J
Biphenyl	ND	25	4.7	1.00	
Chrysene	43	25	5.6	1.00	
Dibenz (a,h) Anthracene	8.1	25	4.9	1.00	J
2,6-Dimethylnaphthalene	43	25	4.3	1.00	
Fluoranthene	58	25	4.6	1.00	
Fluorene	11	25	7.9	1.00	J
Indeno (1,2,3-c,d) Pyrene	16	25	4.0	1.00	J
2-Methylnaphthalene	ND	25	5.9	1.00	
1-Methylnaphthalene	ND	25	5.9	1.00	
1-Methylphenanthrene	ND	25	6.3	1.00	
Naphthalene	ND	25	8.7	1.00	
Perylene	28	25	6.0	1.00	
Phenanthrene	24	25	5.6	1.00	J
Pyrene	65	25	5.7	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	100	14-146	
Nitrobenzene-d5	65	18-162	
p-Terphenyl-d14	103	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SS-170706	**17-07-0331-2-AA**	**07/06/17 17:43**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/17/17 20:26**	**170714L15**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	17	4.1	1.00	
Acenaphthylene	ND	17	3.1	1.00	
Anthracene	ND	17	6.0	1.00	
Benzo (a) Anthracene	4.4	17	3.7	1.00	J
Benzo (a) Pyrene	4.5	17	3.2	1.00	J
Benzo (b) Fluoranthene	7.1	17	4.7	1.00	J
Benzo (e) Pyrene	6.3	17	3.4	1.00	J
Benzo (g,h,i) Perylene	8.5	17	2.7	1.00	J
Benzo (k) Fluoranthene	ND	17	4.8	1.00	
Biphenyl	ND	17	3.2	1.00	
Chrysene	7.9	17	3.9	1.00	J
Dibenz (a,h) Anthracene	ND	17	3.4	1.00	
2,6-Dimethylnaphthalene	3.5	17	3.0	1.00	J
Fluoranthene	7.7	17	3.2	1.00	J
Fluorene	ND	17	5.4	1.00	
Indeno (1,2,3-c,d) Pyrene	5.3	17	2.8	1.00	J
2-Methylnaphthalene	ND	17	4.0	1.00	
1-Methylnaphthalene	ND	17	4.0	1.00	
1-Methylphenanthrene	ND	17	4.3	1.00	
Naphthalene	ND	17	6.0	1.00	
Perylene	ND	17	4.1	1.00	
Phenanthrene	3.9	17	3.9	1.00	J
Pyrene	9.0	17	3.9	1.00	J

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	91	14-146	
Nitrobenzene-d5	59	18-162	
p-Terphenyl-d14	95	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 3 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SS-170706	**17-07-0331-3-AA**	**07/06/17 15:35**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/18/17 12:05**	**170714L15**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	22	5.2	1.00	
Acenaphthylene	ND	22	4.0	1.00	
Anthracene	ND	22	7.7	1.00	
Benzo (a) Anthracene	6.9	22	4.8	1.00	J
Benzo (a) Pyrene	7.6	22	4.1	1.00	J
Benzo (b) Fluoranthene	11	22	6.1	1.00	J
Benzo (e) Pyrene	11	22	4.4	1.00	J
Benzo (g,h,i) Perylene	7.5	22	3.4	1.00	J
Benzo (k) Fluoranthene	6.9	22	6.2	1.00	J
Biphenyl	ND	22	4.2	1.00	
Chrysene	14	22	5.0	1.00	J
Dibenz (a,h) Anthracene	ND	22	4.3	1.00	
2,6-Dimethylnaphthalene	5.9	22	3.8	1.00	J
Fluoranthene	21	22	4.1	1.00	J
Fluorene	ND	22	7.0	1.00	
Indeno (1,2,3-c,d) Pyrene	4.7	22	3.5	1.00	J
2-Methylnaphthalene	ND	22	5.2	1.00	
1-Methylnaphthalene	ND	22	5.2	1.00	
1-Methylphenanthrene	ND	22	5.5	1.00	
Naphthalene	ND	22	7.7	1.00	
Perylene	20	22	5.3	1.00	J
Phenanthrene	14	22	5.0	1.00	J
Pyrene	25	22	5.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	95	14-146	
Nitrobenzene-d5	67	18-162	
p-Terphenyl-d14	112	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 4 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SS-170706	**17-07-0331-4-AA**	**07/06/17 09:00**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/17/17 21:05**	**170714L15**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	25	5.8	1.00	
Acenaphthylene	ND	25	4.4	1.00	
Anthracene	21	25	8.6	1.00	J
Benzo (a) Anthracene	79	25	5.3	1.00	
Benzo (a) Pyrene	74	25	4.5	1.00	
Benzo (b) Fluoranthene	130	25	6.7	1.00	
Benzo (e) Pyrene	120	25	4.8	1.00	
Benzo (g,h,i) Perylene	63	25	3.8	1.00	
Benzo (k) Fluoranthene	95	25	6.8	1.00	
Biphenyl	ND	25	4.6	1.00	
Chrysene	210	25	5.5	1.00	
Dibenz (a,h) Anthracene	26	25	4.8	1.00	
2,6-Dimethylnaphthalene	35	25	4.2	1.00	
Fluoranthene	310	25	4.5	1.00	
Fluorene	16	25	7.7	1.00	J
Indeno (1,2,3-c,d) Pyrene	46	25	3.9	1.00	
2-Methylnaphthalene	10	25	5.7	1.00	J
1-Methylnaphthalene	ND	25	5.7	1.00	
1-Methylphenanthrene	ND	25	6.1	1.00	
Naphthalene	10	25	8.5	1.00	J
Perylene	34	25	5.8	1.00	
Phenanthrene	93	25	5.5	1.00	
Pyrene	290	25	5.5	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	84	14-146	
Nitrobenzene-d5	55	18-162	
p-Terphenyl-d14	84	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 5 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-097-241**	**N/A**	**Solid**	**GC/MS AAA**	**07/14/17**	**07/17/17 18:30**	**170714L15**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthene	ND	10	2.4	1.00	
Acenaphthylene	ND	10	1.8	1.00	
Anthracene	ND	10	3.5	1.00	
Benzo (a) Anthracene	ND	10	2.2	1.00	
Benzo (a) Pyrene	ND	10	1.8	1.00	
Benzo (b) Fluoranthene	ND	10	2.7	1.00	
Benzo (e) Pyrene	ND	10	2.0	1.00	
Benzo (g,h,i) Perylene	ND	10	1.5	1.00	
Benzo (k) Fluoranthene	ND	10	2.8	1.00	
Biphenyl	ND	10	1.9	1.00	
Chrysene	ND	10	2.2	1.00	
Dibenz (a,h) Anthracene	ND	10	2.0	1.00	
2,6-Dimethylnaphthalene	ND	10	1.7	1.00	
Fluoranthene	ND	10	1.8	1.00	
Fluorene	ND	10	3.1	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	10	1.6	1.00	
2-Methylnaphthalene	ND	10	2.3	1.00	
1-Methylnaphthalene	ND	10	2.3	1.00	
1-Methylphenanthrene	ND	10	2.5	1.00	
Naphthalene	ND	10	3.5	1.00	
Perylene	ND	10	2.4	1.00	
Phenanthrene	ND	10	2.2	1.00	
Pyrene	ND	10	2.2	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	84	14-146	
Nitrobenzene-d5	59	18-162	
p-Terphenyl-d14	75	34-148	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS1-SS-170706	**17-07-0331-1-AA**	**07/06/17 13:29**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 20:42**	**170714L14**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB005/008	ND	1.0	0.20	1.00	
PCB018	ND	0.51	0.17	1.00	
PCB028	ND	0.51	0.18	1.00	
PCB037	ND	0.51	0.15	1.00	
PCB044	ND	0.51	0.39	1.00	
PCB049	ND	0.51	0.13	1.00	
PCB052	ND	0.51	0.48	1.00	
PCB066	ND	0.51	0.31	1.00	
PCB070	ND	0.51	0.18	1.00	
PCB074	ND	0.51	0.23	1.00	
PCB077	ND	0.51	0.29	1.00	
PCB081	ND	0.51	0.23	1.00	
PCB087	ND	0.51	0.28	1.00	
PCB099	ND	0.51	0.12	1.00	
PCB101	ND	0.51	0.11	1.00	
PCB105	ND	0.51	0.14	1.00	
PCB110	ND	0.51	0.086	1.00	
PCB114	ND	0.51	0.19	1.00	
PCB118	ND	0.51	0.088	1.00	
PCB119	ND	0.51	0.16	1.00	
PCB123	ND	0.51	0.19	1.00	
PCB126	ND	0.51	0.14	1.00	
PCB128	ND	0.51	0.31	1.00	
PCB132/153	1.2	1.0	0.41	1.00	
PCB138/158	ND	1.0	0.90	1.00	
PCB149	ND	0.51	0.30	1.00	
PCB151	ND	0.51	0.22	1.00	
PCB156	ND	0.51	0.20	1.00	
PCB157	ND	0.51	0.22	1.00	
PCB167	ND	0.51	0.34	1.00	
PCB168	ND	0.51	0.36	1.00	
PCB169	ND	0.51	0.17	1.00	
PCB170	ND	0.51	0.28	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB177	ND	0.51	0.30	1.00	
PCB180	ND	0.51	0.23	1.00	
PCB183	ND	0.51	0.24	1.00	
PCB187	ND	0.51	0.26	1.00	
PCB189	ND	0.51	0.16	1.00	
PCB194	ND	0.51	0.19	1.00	
PCB195	ND	0.51	0.15	1.00	
PCB201	ND	0.51	0.087	1.00	
PCB206	ND	0.51	0.29	1.00	
PCB209	ND	0.51	0.16	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	71	14-146	
p-Terphenyl-d14	96	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 3 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS2-SS-170706	**17-07-0331-2-AA**	**07/06/17 17:43**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 21:05**	**170714L14**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB005/008	ND	0.70	0.13	1.00	
PCB018	ND	0.35	0.11	1.00	
PCB028	ND	0.35	0.12	1.00	
PCB037	ND	0.35	0.11	1.00	
PCB044	ND	0.35	0.27	1.00	
PCB049	ND	0.35	0.087	1.00	
PCB052	ND	0.35	0.33	1.00	
PCB066	ND	0.35	0.22	1.00	
PCB070	ND	0.35	0.13	1.00	
PCB074	ND	0.35	0.16	1.00	
PCB077	ND	0.35	0.20	1.00	
PCB081	ND	0.35	0.16	1.00	
PCB087	ND	0.35	0.20	1.00	
PCB099	ND	0.35	0.083	1.00	
PCB101	ND	0.35	0.078	1.00	
PCB105	ND	0.35	0.094	1.00	
PCB110	ND	0.35	0.059	1.00	
PCB114	ND	0.35	0.13	1.00	
PCB118	ND	0.35	0.061	1.00	
PCB119	ND	0.35	0.11	1.00	
PCB123	ND	0.35	0.13	1.00	
PCB126	ND	0.35	0.096	1.00	
PCB128	ND	0.35	0.21	1.00	
PCB132/153	ND	0.70	0.28	1.00	
PCB138/158	ND	0.70	0.62	1.00	
PCB149	ND	0.35	0.21	1.00	
PCB151	ND	0.35	0.15	1.00	
PCB156	ND	0.35	0.14	1.00	
PCB157	ND	0.35	0.15	1.00	
PCB167	ND	0.35	0.23	1.00	
PCB168	ND	0.35	0.25	1.00	
PCB169	ND	0.35	0.11	1.00	
PCB170	ND	0.35	0.19	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 4 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB177	ND	0.35	0.21	1.00	
PCB180	ND	0.35	0.16	1.00	
PCB183	ND	0.35	0.16	1.00	
PCB187	ND	0.35	0.18	1.00	
PCB189	ND	0.35	0.11	1.00	
PCB194	ND	0.35	0.13	1.00	
PCB195	ND	0.35	0.11	1.00	
PCB201	ND	0.35	0.060	1.00	
PCB206	ND	0.35	0.20	1.00	
PCB209	ND	0.35	0.11	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	112	14-146	
p-Terphenyl-d14	139	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 5 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS3-SS-170706	**17-07-0331-3-AA**	**07/06/17 15:35**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 21:29**	**170714L14**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB005/008	ND	0.89	0.17	1.00	
PCB018	ND	0.45	0.15	1.00	
PCB028	ND	0.45	0.16	1.00	
PCB037	ND	0.45	0.14	1.00	
PCB044	ND	0.45	0.34	1.00	
PCB049	ND	0.45	0.11	1.00	
PCB052	ND	0.45	0.43	1.00	
PCB066	ND	0.45	0.28	1.00	
PCB070	ND	0.45	0.16	1.00	
PCB074	ND	0.45	0.20	1.00	
PCB077	ND	0.45	0.26	1.00	
PCB081	ND	0.45	0.20	1.00	
PCB087	ND	0.45	0.25	1.00	
PCB099	ND	0.45	0.11	1.00	
PCB101	ND	0.45	0.099	1.00	
PCB105	ND	0.45	0.12	1.00	
PCB110	ND	0.45	0.076	1.00	
PCB114	ND	0.45	0.17	1.00	
PCB118	ND	0.45	0.077	1.00	
PCB119	ND	0.45	0.14	1.00	
PCB123	ND	0.45	0.16	1.00	
PCB126	ND	0.45	0.12	1.00	
PCB128	ND	0.45	0.27	1.00	
PCB132/153	ND	0.89	0.36	1.00	
PCB138/158	ND	0.89	0.79	1.00	
PCB149	ND	0.45	0.26	1.00	
PCB151	ND	0.45	0.20	1.00	
PCB156	ND	0.45	0.17	1.00	
PCB157	ND	0.45	0.19	1.00	
PCB167	ND	0.45	0.30	1.00	
PCB168	ND	0.45	0.32	1.00	
PCB169	ND	0.45	0.15	1.00	
PCB170	ND	0.45	0.25	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 6 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB177	ND	0.45	0.26	1.00	
PCB180	ND	0.45	0.21	1.00	
PCB183	ND	0.45	0.21	1.00	
PCB187	ND	0.45	0.23	1.00	
PCB189	ND	0.45	0.14	1.00	
PCB194	ND	0.45	0.17	1.00	
PCB195	ND	0.45	0.13	1.00	
PCB201	ND	0.45	0.076	1.00	
PCB206	ND	0.45	0.26	1.00	
PCB209	ND	0.45	0.14	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	133	14-146	
p-Terphenyl-d14	197	34-148	2,7

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 7 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WS4-SS-170706	**17-07-0331-4-AA**	**07/06/17 09:00**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 21:53**	**170714L14**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB005/008	ND	0.98	0.19	1.00	
PCB018	ND	0.49	0.16	1.00	
PCB028	ND	0.49	0.17	1.00	
PCB037	ND	0.49	0.15	1.00	
PCB044	ND	0.49	0.37	1.00	
PCB049	ND	0.49	0.12	1.00	
PCB052	ND	0.49	0.47	1.00	
PCB066	1.2	0.49	0.30	1.00	
PCB070	1.6	0.49	0.18	1.00	
PCB074	ND	0.49	0.22	1.00	
PCB077	ND	0.49	0.28	1.00	
PCB081	ND	0.49	0.22	1.00	
PCB087	ND	0.49	0.27	1.00	
PCB099	2.6	0.49	0.12	1.00	
PCB101	2.9	0.49	0.11	1.00	
PCB105	ND	0.49	0.13	1.00	
PCB110	4.5	0.49	0.083	1.00	
PCB114	ND	0.49	0.18	1.00	
PCB118	5.8	0.49	0.085	1.00	
PCB119	ND	0.49	0.15	1.00	
PCB123	ND	0.49	0.18	1.00	
PCB126	ND	0.49	0.13	1.00	
PCB128	ND	0.49	0.29	1.00	
PCB132/153	7.9	0.98	0.40	1.00	
PCB138/158	6.7	0.98	0.87	1.00	
PCB149	3.4	0.49	0.29	1.00	
PCB151	ND	0.49	0.22	1.00	
PCB156	ND	0.49	0.19	1.00	
PCB157	ND	0.49	0.21	1.00	
PCB167	ND	0.49	0.33	1.00	
PCB168	ND	0.49	0.35	1.00	
PCB169	ND	0.49	0.16	1.00	
PCB170	ND	0.49	0.27	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 8 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB177	ND	0.49	0.29	1.00	
PCB180	3.0	0.49	0.23	1.00	
PCB183	0.94	0.49	0.23	1.00	
PCB187	1.9	0.49	0.25	1.00	
PCB189	ND	0.49	0.16	1.00	
PCB194	ND	0.49	0.18	1.00	
PCB195	ND	0.49	0.15	1.00	
PCB201	ND	0.49	0.084	1.00	
PCB206	ND	0.49	0.28	1.00	
PCB209	ND	0.49	0.15	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	75	14-146	
p-Terphenyl-d14	102	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 9 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-418-264**	**N/A**	**Solid**	**GC/MS HHH**	**07/14/17**	**07/17/17 17:05**	**170714L14**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB005/008	ND	0.40	0.077	1.00	
PCB018	ND	0.20	0.065	1.00	
PCB028	ND	0.20	0.069	1.00	
PCB037	ND	0.20	0.061	1.00	
PCB044	ND	0.20	0.15	1.00	
PCB049	ND	0.20	0.050	1.00	
PCB052	ND	0.20	0.19	1.00	
PCB066	ND	0.20	0.12	1.00	
PCB070	ND	0.20	0.072	1.00	
PCB074	ND	0.20	0.090	1.00	
PCB077	ND	0.20	0.12	1.00	
PCB081	ND	0.20	0.090	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.047	1.00	
PCB101	ND	0.20	0.044	1.00	
PCB105	ND	0.20	0.053	1.00	
PCB110	ND	0.20	0.034	1.00	
PCB114	ND	0.20	0.074	1.00	
PCB118	ND	0.20	0.035	1.00	
PCB119	ND	0.20	0.062	1.00	
PCB123	ND	0.20	0.073	1.00	
PCB126	ND	0.20	0.055	1.00	
PCB128	ND	0.20	0.12	1.00	
PCB132/153	ND	0.40	0.16	1.00	
PCB138/158	ND	0.40	0.35	1.00	
PCB149	ND	0.20	0.12	1.00	
PCB151	ND	0.20	0.088	1.00	
PCB156	ND	0.20	0.077	1.00	
PCB157	ND	0.20	0.085	1.00	
PCB167	ND	0.20	0.13	1.00	
PCB168	ND	0.20	0.14	1.00	
PCB169	ND	0.20	0.065	1.00	
PCB170	ND	0.20	0.11	1.00	
PCB177	ND	0.20	0.12	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon TMDL / 160548-07.02			Page 10 of 10

Parameter	Result	RL	MDL	DF	Qualifiers
PCB180	ND	0.20	0.092	1.00	
PCB183	ND	0.20	0.093	1.00	
PCB187	ND	0.20	0.10	1.00	
PCB189	ND	0.20	0.064	1.00	
PCB194	ND	0.20	0.074	1.00	
PCB195	ND	0.20	0.060	1.00	
PCB201	ND	0.20	0.034	1.00	
PCB206	ND	0.20	0.12	1.00	
PCB209	ND	0.20	0.061	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	76	14-146	
p-Terphenyl-d14	105	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

eurofins | Calscience

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo		Date Sampled:	07/06/17
		Date Received:	07/07/17
		Work Order No:	17-07-0331
		Date Analyzed:	07/14/17
		Method:	ASTM D4464M
Project:	Colorado Lagoon TMDL / 160548-07.02		Page 1 of 4

Sample ID	Depth ft	Description	Mean Grain Size mm
WS1-SS-170706		Silt	0.041

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.22	10.70	9.73	64.72	14.62	79.34

V 3.0

Return to Contents

eurofins | Calscience

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo		Date Sampled:	07/06/17
		Date Received:	07/07/17
		Work Order No:	17-07-0331
		Date Analyzed:	07/14/17
		Method:	ASTM D4464M
Project:	Colorado Lagoon TMDL / 160548-07.02		Page 2 of 4

Sample ID	Depth ft	Description	Mean Grain Size mm
WS2-SS-170706		Silt	0.045

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.01	8.01	19.00	61.09	11.90	72.98

V 3.0

Return to Contents

eurofins | Calscience

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo		Date Sampled:	07/06/17
		Date Received:	07/07/17
		Work Order No:	17-07-0331
		Date Analyzed:	07/14/17
		Method:	ASTM D4464M
Project:	Colorado Lagoon TMDL / 160548-07.02		Page 3 of 4

Sample ID	Depth ft	Description	Mean Grain Size mm
WS3-SS-170706		Silt	0.026

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.00	3.67	7.57	71.53	17.23	88.76

V 3.0

Return to Contents

eurofins | Calscience

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

ANCHOR QEA - Mission Viejo		Date Sampled:	07/06/17
		Date Received:	07/07/17
		Work Order No:	17-07-0331
		Date Analyzed:	07/14/17
		Method:	ASTM D4464M
Project:	Colorado Lagoon TMDL / 160548-07.02		Page 4 of 4

Sample ID	Depth ft	Description	Mean Grain Size mm
WS4-SS-170706		Fine Sand	0.247

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	5.24	10.30	13.80	24.10	13.90	28.30	4.35	32.65

V 3.0

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 9060A
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
17-07-0174-5	**Sample**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 12:15**	**H0724TOCS1**
17-07-0174-5	**Matrix Spike**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 12:15**	**H0724TOCS1**
17-07-0174-5	**Matrix Spike Duplicate**	**Sediment**	**TOC 9**	**07/24/17**	**07/24/17 12:15**	**H0724TOCS1**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.3480	3.000	3.421	102	3.687	111	75-125	7	0-25	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3050B
		Method:	EPA 6020
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:49**	**170719S01**
WS1-SS-170706	**Matrix Spike**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:11**	**170719S01**
WS1-SS-170706	**Matrix Spike Duplicate**	**Sediment**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:13**	**170719S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Cadmium	0.2166	25.00	29.46	117	25.82	102	80-120	13	0-20	
Copper	18.79	25.00	42.41	94	39.57	83	80-120	7	0-20	
Lead	13.79	25.00	38.38	98	34.69	84	80-120	10	0-20	
Zinc	70.38	25.00	92.07	87	88.85	74	80-120	4	0-20	3

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 7471A Total
		Method:	EPA 7471A
Project: Colorado Lagoon TMDL / 160548-07.02			Page 3 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:07**	**170719S03**
WS1-SS-170706	**Matrix Spike**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:10**	**170719S03**
WS1-SS-170706	**Matrix Spike Duplicate**	**Sediment**	**Mercury 07**	**07/19/17**	**07/19/17 17:12**	**170719S03**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.03859	0.8350	0.7042	80	0.7326	83	76-136	4	0-16	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
Project: Colorado Lagoon TMDL / 160548-07.02			Page 4 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 19:31**	**170711S17A**
WS1-SS-170706	**Matrix Spike**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 20:35**	**170711S17A**
WS1-SS-170706	**Matrix Spike Duplicate**	**Sediment**	**GC/MS BBB**	**07/11/17**	**07/19/17 20:51**	**170711S17A**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alpha Chlordane	0.8927	5.000	4.085	64	2.845	39	25-200	36	0-25	4
4,4'-DDD	ND	5.000	3.819	76	2.255	45	25-200	51	0-25	4
4,4'-DDE	ND	5.000	6.863	137	4.845	97	25-200	34	0-25	4
4,4'-DDT	ND	5.000	1.610	32	1.747	35	25-200	8	0-25	
Dieldrin	ND	5.000	4.843	97	3.183	64	25-200	41	0-25	4
Gamma Chlordane	1.016	5.000	4.451	69	2.957	39	25-200	40	0-25	4
Heptachlor	ND	5.000	3.681	74	2.657	53	25-200	32	0-25	4
Heptachlor Epoxide	ND	5.000	3.533	71	2.477	50	25-200	35	0-25	4

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
Project: Colorado Lagoon TMDL / 160548-07.02			Page 5 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/17/17 20:07**	**170714S15**
WS1-SS-170706	**Matrix Spike**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/17/17 19:28**	**170714S15**
WS1-SS-170706	**Matrix Spike Duplicate**	**Sediment**	**GC/MS AAA**	**07/14/17**	**07/17/17 19:48**	**170714S15**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acenaphthene	ND	100.0	99.45	99	100.8	101	40-160	1	0-20	
Acenaphthylene	ND	100.0	93.54	94	92.57	93	40-160	1	0-20	
Anthracene	ND	100.0	115.7	116	109.4	109	40-160	6	0-20	
Benzo (a) Anthracene	ND	100.0	122.0	122	121.5	122	40-160	0	0-20	
Benzo (a) Pyrene	ND	100.0	162.6	163	118.4	118	40-160	31	0-20	3,4
Benzo (b) Fluoranthene	12.44	100.0	250.2	238	133.2	121	40-160	61	0-20	3,4
Benzo (g,h,i) Perylene	14.00	100.0	148.1	134	116.6	103	40-160	24	0-20	4
Benzo (k) Fluoranthene	ND	100.0	225.1	225	111.4	111	40-160	68	0-20	3,4
Chrysene	17.08	100.0	314.0	297	147.6	131	40-160	72	0-20	3,4
Dibenz (a,h) Anthracene	ND	100.0	122.1	122	112.0	112	40-160	9	0-20	
Fluoranthene	22.94	100.0	323.0	300	210.7	188	40-160	42	0-20	3,4
Fluorene	ND	100.0	107.0	107	103.9	104	40-160	3	0-20	
Indeno (1,2,3-c,d) Pyrene	ND	100.0	146.4	146	113.3	113	40-160	26	0-20	4
2-Methylnaphthalene	ND	100.0	98.65	99	102.5	103	40-160	4	0-20	
1-Methylnaphthalene	ND	100.0	89.19	89	91.35	91	40-160	2	0-20	
Naphthalene	ND	100.0	85.59	86	89.87	90	40-160	5	0-20	
Phenanthrene	ND	100.0	126.2	126	225.9	226	40-160	57	0-20	3,4
Pyrene	25.50	100.0	334.4	309	223.0	197	40-160	40	0-46	3

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
Project: Colorado Lagoon TMDL / 160548-07.02			Page 6 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 20:42**	**170714S14A**
WS1-SS-170706	**Matrix Spike**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 19:07**	**170714S14A**
WS1-SS-170706	**Matrix Spike Duplicate**	**Sediment**	**GC/MS HHH**	**07/14/17**	**07/17/17 19:31**	**170714S14A**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
PCB018	ND	50.00	41.58	83	42.69	85	50-150	3	0-25	
PCB028	ND	50.00	42.66	85	40.66	81	50-150	5	0-25	
PCB044	ND	50.00	48.63	97	50.02	100	50-150	3	0-25	
PCB052	ND	50.00	39.12	78	40.30	81	50-150	3	0-25	
PCB066	ND	50.00	58.23	116	56.81	114	50-150	2	0-25	
PCB077	ND	50.00	57.50	115	57.73	115	50-150	0	0-25	
PCB101	ND	50.00	52.31	105	51.80	104	50-150	1	0-25	
PCB105	ND	50.00	61.93	124	61.98	124	50-150	0	0-25	
PCB118	ND	50.00	61.84	124	62.76	126	50-150	1	0-25	
PCB126	ND	50.00	61.89	124	63.27	127	50-150	2	0-25	
PCB128	ND	50.00	57.81	116	59.47	119	50-150	3	0-25	
PCB170	ND	50.00	47.95	96	49.47	99	50-150	3	0-25	
PCB180	ND	50.00	67.46	135	68.51	137	50-150	2	0-25	
PCB187	ND	50.00	62.55	125	62.93	126	50-150	1	0-25	
PCB195	ND	50.00	50.59	101	52.93	106	50-150	5	0-25	
PCB206	ND	50.00	45.22	90	47.77	96	50-150	5	0-25	
PCB209	ND	50.00	50.82	102	53.04	106	50-150	4	0-25	

Return to Contents

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Quality Control - PDS

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3050B
		Method:	EPA 6020
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**ICP/MS 03**	**07/19/17 00:00**	**07/21/17 16:49**	**170719S01**
WS1-SS-170706	**PDS**	**Sediment**	**ICP/MS 03**	**07/19/17 00:00**	**07/21/17 16:46**	**170719S01**

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS %Rec.	%Rec. CL	Qualifiers
Cadmium	0.2166	25.00	26.45	105	75-125	
Copper	18.79	25.00	40.56	87	75-125	
Lead	13.79	25.00	37.34	94	75-125	
Zinc	70.38	25.00	92.19	87	75-125	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	SM 2540 B (M)
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
WS1-SS-170706	**Sample**	**Sediment**	**N/A**	**07/12/17 00:00**	**07/12/17 17:00**	**H0712TSD2**
WS1-SS-170706	**Sample Duplicate**	**Sediment**	**N/A**	**07/12/17 00:00**	**07/12/17 17:00**	**H0712TSD2**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total	39.30	39.60	1	0-10	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	N/A
		Method:	EPA 9060A
Project: Colorado Lagoon TMDL / 160548-07.02			Page 1 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-1728	**LCS**	**Solid**	**TOC 9**	**07/24/17**	**07/24/17 12:15**	**H0724TOCL1**
099-06-013-1728	**LCSD**	**Solid**	**TOC 9**	**07/24/17**	**07/24/17 12:15**	**H0724TOCL1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.6000	0.6427	107	0.6863	114	80-120	7	0-20	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3050B
		Method:	EPA 6020
Project: Colorado Lagoon TMDL / 160548-07.02			Page 2 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-254-526	**LCS**	**Solid**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:06**	**170719L01E**
099-15-254-526	**LCSD**	**Solid**	**ICP/MS 03**	**07/19/17**	**07/21/17 16:08**	**170719L01E**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Cadmium	25.00	25.28	101	25.83	103	80-120	2	0-20	
Copper	25.00	24.08	96	24.67	99	80-120	2	0-20	
Lead	25.00	24.63	99	25.26	101	80-120	3	0-20	
Zinc	25.00	24.91	100	25.76	103	80-120	3	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 7471A Total
		Method:	EPA 7471A
Project: Colorado Lagoon TMDL / 160548-07.02			Page 3 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-278-329	**LCS**	**Solid**	**Mercury 07**	**07/19/17**	**07/19/17 17:05**	**170719L03E**
099-16-278-329	**LCSD**	**Solid**	**Mercury 07**	**07/19/17**	**07/20/17 12:33**	**170719L03E**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	0.7408	89	0.8120	97	82-124	9	0-16	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

eurofins | Calscience

Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
Project: Colorado Lagoon TMDL / 160548-07.02			Page 4 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-154-79	**LCS**	**Solid**	**GC/MS BBB**	**07/11/17**	**07/19/17 17:57**	**170711L17**
099-16-154-79	**LCSD**	**Solid**	**GC/MS BBB**	**07/11/17**	**07/19/17 18:13**	**170711L17**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alpha Chlordane	5.000	4.547	91	4.577	92	25-200	1	0-25	
4,4'-DDD	5.000	4.746	95	4.768	95	25-200	0	0-25	
4,4'-DDE	5.000	4.865	97	4.791	96	25-200	2	0-25	
4,4'-DDT	5.000	4.955	99	4.753	95	25-200	4	0-25	
Dieldrin	5.000	4.900	98	4.915	98	25-200	0	0-25	
Gamma Chlordane	5.000	4.751	95	4.678	94	25-200	2	0-25	
Heptachlor	5.000	4.692	94	4.879	98	25-200	4	0-25	
Heptachlor Epoxide	5.000	4.787	96	4.793	96	25-200	0	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
Project: Colorado Lagoon TMDL / 160548-07.02			Page 5 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-097-241	**LCS**	**Solid**	**GC/MS AAA**	**07/14/17**	**07/17/17 18:49**	**170714L15**
099-14-097-241	**LCSD**	**Solid**	**GC/MS AAA**	**07/14/17**	**07/17/17 19:09**	**170714L15**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Acenaphthene	100.0	78.55	79	79.69	80	48-108	38-118	1	0-11	
Acenaphthylene	100.0	73.43	73	75.89	76	40-160	20-180	3	0-20	
Anthracene	100.0	83.10	83	84.26	84	40-160	20-180	1	0-20	
Benzo (a) Anthracene	100.0	79.70	80	80.33	80	40-160	20-180	1	0-20	
Benzo (a) Pyrene	100.0	80.27	80	79.63	80	40-160	20-180	1	0-20	
Benzo (b) Fluoranthene	100.0	76.83	77	77.63	78	40-160	20-180	1	0-20	
Benzo (g,h,i) Perylene	100.0	71.99	72	74.26	74	40-160	20-180	3	0-20	
Benzo (k) Fluoranthene	100.0	87.13	87	84.40	84	40-160	20-180	3	0-20	
Chrysene	100.0	87.32	87	87.40	87	40-160	20-180	0	0-20	
Dibenz (a,h) Anthracene	100.0	66.34	66	65.39	65	40-160	20-180	1	0-20	
Fluoranthene	100.0	84.66	85	84.97	85	40-160	20-180	0	0-20	
Fluorene	100.0	77.80	78	77.36	77	40-160	20-180	1	0-20	
Indeno (1,2,3-c,d) Pyrene	100.0	43.52	44	40.01	40	40-160	20-180	8	0-20	
2-Methylnaphthalene	100.0	78.71	79	84.74	85	40-160	20-180	7	0-20	
1-Methylnaphthalene	100.0	70.85	71	77.25	77	40-160	20-180	9	0-20	
Naphthalene	100.0	75.17	75	76.96	77	40-160	20-180	2	0-20	
Phenanthrene	100.0	86.04	86	86.30	86	40-160	20-180	0	0-20	
Pyrene	100.0	87.34	87	89.58	90	40-160	20-180	3	0-16	

Total number of LCS compounds: 18
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/07/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0331
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
Project: Colorado Lagoon TMDL / 160548-07.02			Page 6 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-418-264	**LCS**	**Solid**	**GC/MS HHH**	**07/14/17**	**07/17/17 17:29**	**170714L14**
099-16-418-264	**LCSD**	**Solid**	**GC/MS HHH**	**07/14/17**	**07/17/17 17:54**	**170714L14**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
PCB018	50.00	40.14	80	38.74	77	24-132	6-150	4	0-28	
PCB028	50.00	42.01	84	40.85	82	31-133	14-150	3	0-26	
PCB044	50.00	43.46	87	42.03	84	36-120	22-134	3	0-28	
PCB052	50.00	39.06	78	37.55	75	31-121	16-136	4	0-27	
PCB066	50.00	49.25	98	47.91	96	43-139	27-155	3	0-25	
PCB077	50.00	48.42	97	47.31	95	41-131	26-146	2	0-25	
PCB101	50.00	43.68	87	42.84	86	37-121	23-135	2	0-27	
PCB105	50.00	51.48	103	50.26	101	48-132	34-146	2	0-26	
PCB118	50.00	50.33	101	49.70	99	46-136	31-151	1	0-25	
PCB126	50.00	49.51	99	48.72	97	38-134	22-150	2	0-25	
PCB128	50.00	47.62	95	46.20	92	40-130	25-145	3	0-26	
PCB170	50.00	43.92	88	43.16	86	40-124	26-138	2	0-29	
PCB180	50.00	53.31	107	52.69	105	41-143	24-160	1	0-26	
PCB187	50.00	49.71	99	48.74	97	39-129	24-144	2	0-26	
PCB195	50.00	48.85	98	48.19	96	44-128	30-142	1	0-28	
PCB206	50.00	43.73	87	43.48	87	33-135	16-152	1	0-24	
PCB209	50.00	47.01	94	46.16	92	29-137	11-155	2	0-29	

Total number of LCS compounds: 17
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Glossary of Terms and Qualifiers

Work Order: 17-07-0331 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Return to Contents

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For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY: **17-07-0331**

DATE: ~~03/24/17~~ 7/6/17

PAGE: 1 OF 1

LABORATORY CLIENT: Anchor QEA

ADDRESS: 27201 Puerta Real, Suite 350

CITY: Mission Viejo STATE: CA ZIP: 92691

TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Colorado Lagoon TMDL / 160548-07.02

P.O. NO.: 160548-07.01

PROJECT CONTACT: Chris Osuch

SAMPLER(S): (PRINT) C. Osuch, C. Dolphin

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☑ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

Report down to the MDL

Increase MS/MSD concentrations for zinc and copper

Analyze SRMs with Metals, TOC, PCBs, PAHs and pesticides

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	EPA 6020 Cd, Cu, Hg, Pb, Zn	EPA 8270C SIM PCB Congeners	EPA 8270C SIM PAHs	EPA 8270C SIM Pesticides	SM 2540 D Total solids	EPA 9060 - TOC	ASTM D4464 (M) Particle Size	MS/MSD
1	WS1-SS-170706	7/6/17	1329	SED	3 ~~1329~~	X			X	X	X	X	X	X	X	X
2	WS2-SS-170706	↓	1743	SED	4	X			X	X	X	X	X	X	X	
3	WS3-SS-170706	↓	1535	SED	3	X			X	X	X	X	X	X	X	
4	WS4-SS-170706	↓	0900	SED	3	X			X	X	X	X	X	X	X	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
	ECL	7/7/17	~~1068~~ 1220
Relinquished by: (Signature)	Received by: (Signature/Affiliation) Danielle EEI	Date: 7/7/17	Time: 19:00
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision

Return to Contents

0331

Table 1
Proposed Conventional and Chemical Parameters, Recommended Analytical Methods, and Target Method Detection and Reporting Limits for Colorado Lagoon TMDL Compliance Monitoring (for California SQOs)

Parameter	Analytical Method	Unit	TMDL Target Reporting Limit	TMDL Numeric Target	ECI Reporting Limit
Conventional Parameters					
Particle size	ASTM D4464	%	--	--	0.01
Total solids	SM 2540B	%	0.1	--	0.1
Total organic carbon	EPA 9060A	%	0.1	--	0.1
Total Metals					
Cadmium	EPA 6020	mg/kg	0.05	--	0.1
Copper	EPA 6020	mg/kg	0.05	--	0.1
Lead	EPA 6020	mg/kg	0.05	46.7	0.1
Mercury	EPA 7471A	mg/kg	0.05	--	0.0833
Zinc	EPA 6020	mg/kg	0.05	150	1.0
Polycyclic aromatic hydrocarbons (PAHs)					
2,6-Dimethylnaphthalene	EPA 8270C SIM	µg/kg	5	--	10
1-Methylnaphthalene	EPA 8270C SIM	µg/kg	5	--	10
2-Methylnaphthalene	EPA 8270C SIM	µg/kg	5	--	10
1-Mehtylphenanthrene	EPA 8270C SIM	µg/kg	5	--	10
Acenaphthene	EPA 8270C SIM	µg/kg	5	--	10
Acenaphthylene	EPA 8270C SIM	µg/kg	5	--	10
Anthracene	EPA 8270C SIM	µg/kg	5	--	10
Benzo(a)anthracene	EPA 8270C SIM	µg/kg	5	--	10
Benzo(a)pyrene	EPA 8270C SIM	µg/kg	5	--	10
Benzo(e)pyrene	EPA 8270C SIM	µg/kg	5	--	10
Benzo(b)fluoranthene	EPA 8270C SIM	µg/kg	5	--	10
Benzo(g,h,i)perylene	EPA 8270C SIM	µg/kg	5	--	10
Benzo(k)fluoranthene	EPA 8270C SIM	µg/kg	5	--	10
Biphenyl	EPA 8270C SIM	µg/kg	5	--	10
Chrysene	EPA 8270C SIM	µg/kg	5	--	10
Dibenz(a,h)anthracene	EPA 8270C SIM	µg/kg	5	--	10
Fluorene	EPA 8270C SIM	µg/kg	5	--	10
Fluoranthene	EPA 8270C SIM	µg/kg	5	--	10
Indeno(1,2,3-c,d)pyrene	EPA 8270C SIM	µg/kg	5	--	10
Naphthalene	EPA 8270C SIM	µg/kg	5	--	10
Perylene	EPA 8270C SIM	µg/kg	5	--	10
Phenanthrene	EPA 8270C SIM	µg/kg	5	--	10
Pyrene	EPA 8270C SIM	µg/kg	5	--	10
Pesticides					
2,4'-DDD	EPA 8270C-SIM	µg/kg	0.1	--	0.2

Return to Contents

Parameter	Analytical Method	Unit	TMDL Target Reporting Limit	TMDL Numeric Target	ECI Reporting Limit
2,4'-DDE	EPA 8270C-SIM	µg/kg	0.1	--	0.2
2,4'-DDT	EPA 8270C-SIM	µg/kg	0.1	--	0.2
4,4'-DDD	EPA 8270C-SIM	µg/kg	0.1	--	0.2
4,4'-DDE	EPA 8270C-SIM	µg/kg	0.1	--	0.2
4,4'-DDT	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Alpha chlordane (cis-chlordane)	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Gamma chlordane (trans-chlordane)	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Oxychlordane	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Heptachlor	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Heptachlor epoxide	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Cis-nonachlor	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Trans-nonachlor	EPA 8270C-SIM	µg/kg	0.1	--	0.2
Dieldrin	EPA 8270C-SIM	µg/kg	0.1	0.02	0.2
PCB Congeners					
PCB-008	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-018	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-028	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-037	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-044	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-049	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-052	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-066	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-070	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-074	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-077	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-081	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-087	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-099	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-101	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-105	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-110	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-114	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-118	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-119	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-123	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-126	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-128	EPA 8270C SIM	µg/kg	5	--	0.2
PCB132/153	EPA 8270C SIM	µg/kg	10	--	0.4
PCB-149	EPA 8270C SIM	µg/kg	5	--	0.2

Return to Contents

Parameter	Analytical Method	Unit	TMDL Target Reporting Limit	TMDL Numeric Target	ECI Reporting Limit
PCB-138/158	EPA 8270C SIM	µg/kg	5	--	0.4
PCB-151	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-156	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-157	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-167	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-168	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-169	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-170	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-177	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-180	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-183	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-187	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-189	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-194	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-195	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-201	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-206	EPA 8270C SIM	µg/kg	5	--	0.2
PCB-209	EPA 8270C SIM	µg/kg	5	--	0.2

Notes:
Red text = New analytes added for California SQO
1 Method detection limits and reporting limits may vary due to moisture content of sample or matrix interference.
µg/kg = micrograms per kilogram
(M) = modified
mg/kg = milligram per kilogram
N/A = not applicable
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
SIM = selected ion monitoring
SM = Standard Method
TOC = total organic carbon
USEPA = U.S. Environmental Protection Agency

Return to Contents

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WORK ORDER NUMBER: 17-07- 0331

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: ANCHOR QEA

DATE: 07 / 07 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: 0.2°C); Temperature (w/o CF): 3.1 °C (w/ CF): 3.3 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter

Checked by: 671

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 671
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 1108

SAMPLE CONDITION:

	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☐	☐	☑
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☐ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☐ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** ☐ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (Sediment): ☑ Z ☑ 8ozCGJ ☑ 16ozCGJ

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1108

Reviewed by: 671

Return to Contents

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WORK ORDER NUMBER: 17-07-0490

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: ANCHOR QEA, LLC

Client Project Name: Colorado Lagoon / 160548-07.01

Attention: Chris Osuch
27201 Puerta Real
Suite 350
Mission Viejo, CA 92691-8306

Kathleen M. Burney FOR

Approved for release on 08/02/2017 by:
Carla Hollowell
Project Manager

ResultLink

Email your PM

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

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Contents

Client Project Name: Colorado Lagoon / 160548-07.01
Work Order Number: 17-07-0490

1 Work Order Narrative. 3

2 Sample Summary. 4

3 Client Sample Data. 5
3.1 % Lipids via MeCl2 Ext. (NOAA 1993a) (Tissue). 5
3.2 EPA 8270C SIM OC Pesticides (Tissue). 6
3.3 EPA 8270C SIM PAHs (Tissue). 9
3.4 EPA 8270C SIM PCB Congeners (Tissue). 12

4 Quality Control Sample Data. 18
4.1 MS/MSD. 18
4.2 Sample Duplicate. 21
4.3 LCS/LCSD. 22

5 Glossary of Terms and Qualifiers. 25

6 Chain-of-Custody/Sample Receipt Form. 26

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Work Order Narrative

Work Order: 17-07-0490 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/11/17. They were assigned to Work Order 17-07-0490.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Return to Contents

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Sample Summary

Client:	ANCHOR QEA, LLC 27201 Puerta Real, Suite 350 Mission Viejo, CA 92691-8306	Work Order:	17-07-0490
		Project Name:	Colorado Lagoon / 160548-07.01
		PO Number:	
		Date/Time Received:	07/11/17 12:45
		Number of Containers:	2
Attn:	Chris Osuch		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
F1-170711	17-07-0490-1	07/11/17 12:05	1	Tissue
F2-170711	17-07-0490-2	07/11/17 12:15	1	Tissue

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	MeCl2 Ext. (NOAA 1993a)
		Units:	%
Project: Colorado Lagoon / 160548-07.01			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F1-170711	**17-07-0490-1-AA**	**07/11/17 12:05**	**Tissue**	**N/A**	**07/20/17**	**07/21/17 00:00**	**170720B08**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.8	0.10	0.10	1.00	

F2-170711	**17-07-0490-2-AA**	**07/11/17 12:15**	**Tissue**	**N/A**	**07/20/17**	**07/21/17 00:00**	**170720B08**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	1.6	0.10	0.10	1.00	

Method Blank	**099-14-104-186**	**N/A**	**Tissue**	**N/A**	**07/20/17**	**07/21/17 00:00**	**170720B08**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
% Lipids	ND	0.10	0.10	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F1-170711	**17-07-0490-1-AA**	**07/11/17 12:05**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 17:56**	**170720L20**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	2.3	0.20	0.066	1.00	
Cis-nonachlor	2.1	0.20	0.050	1.00	
2,4'-DDD	ND	0.20	0.075	1.00	
2,4'-DDE	ND	0.20	0.035	1.00	
2,4'-DDT	ND	0.20	0.062	1.00	
4,4'-DDD	2.7	0.20	0.039	1.00	
4,4'-DDT	ND	0.20	0.052	1.00	
Dieldrin	ND	0.20	0.11	1.00	
Gamma Chlordane	1.0	0.20	0.053	1.00	
Gamma-BHC	ND	0.20	0.034	1.00	
Heptachlor	ND	0.20	0.051	1.00	
Heptachlor Epoxide	ND	0.20	0.044	1.00	
Oxychlordane	ND	0.20	0.072	1.00	
Trans-nonachlor	3.5	0.20	0.043	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	89	25-200	
2,4,5,6-Tetrachloro-m-Xylene	86	25-200	

F1-170711	**17-07-0490-1-AA**	**07/11/17 12:05**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 19:03**	**170720L20**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
4,4'-DDE	17	0.99	0.20	5.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	76	25-200	
2,4,5,6-Tetrachloro-m-Xylene	76	25-200	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F2-170711	**17-07-0490-2-AA**	**07/11/17 12:15**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 18:11**	**170720L20**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	1.6	0.20	0.067	1.00	
Cis-nonachlor	1.7	0.20	0.051	1.00	
2,4'-DDD	ND	0.20	0.076	1.00	
2,4'-DDE	ND	0.20	0.035	1.00	
2,4'-DDT	ND	0.20	0.062	1.00	
4,4'-DDD	2.4	0.20	0.040	1.00	
4,4'-DDT	ND	0.20	0.053	1.00	
Dieldrin	ND	0.20	0.11	1.00	
Gamma Chlordane	ND	0.20	0.053	1.00	
Gamma-BHC	ND	0.20	0.034	1.00	
Heptachlor	ND	0.20	0.051	1.00	
Heptachlor Epoxide	ND	0.20	0.044	1.00	
Oxychlordane	ND	0.20	0.073	1.00	
Trans-nonachlor	3.5	0.20	0.043	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	99	25-200	
2,4,5,6-Tetrachloro-m-Xylene	79	25-200	

F2-170711	**17-07-0490-2-AA**	**07/11/17 12:15**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 18:47**	**170720L20**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
4,4'-DDE	29	1.0	0.20	5.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	96	25-200	
2,4,5,6-Tetrachloro-m-Xylene	93	25-200	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-790-16**	**N/A**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 14:07**	**170720L20**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Alpha Chlordane	ND	0.20	0.067	1.00	
Cis-nonachlor	ND	0.20	0.051	1.00	
2,4'-DDD	ND	0.20	0.076	1.00	
2,4'-DDE	ND	0.20	0.035	1.00	
2,4'-DDT	ND	0.20	0.062	1.00	
4,4'-DDD	ND	0.20	0.040	1.00	
4,4'-DDE	ND	0.20	0.040	1.00	
4,4'-DDT	ND	0.20	0.053	1.00	
Dieldrin	ND	0.20	0.11	1.00	
Gamma Chlordane	ND	0.20	0.053	1.00	
Gamma-BHC	ND	0.20	0.034	1.00	
Heptachlor	ND	0.20	0.051	1.00	
Heptachlor Epoxide	ND	0.20	0.044	1.00	
Oxychlordane	ND	0.20	0.073	1.00	
Trans-nonachlor	ND	0.20	0.043	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibutylchlorendate	83	25-200	
2,4,5,6-Tetrachloro-m-Xylene	81	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	mg/kg
Project: Colorado Lagoon / 160548-07.01			Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F1-170711	**17-07-0490-1-AA**	**07/11/17 12:05**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/25/17 18:55**	**170720L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.0099	0.0018	1.00	
Anthracene	ND	0.0099	0.0034	1.00	
Benzo (a) Anthracene	ND	0.0099	0.0021	1.00	
Benzo (a) Pyrene	ND	0.0099	0.0018	1.00	
Benzo (b) Fluoranthene	ND	0.0099	0.0027	1.00	
Benzo (g,h,i) Perylene	ND	0.0099	0.0015	1.00	
Benzo (k) Fluoranthene	ND	0.0099	0.0028	1.00	
Chrysene	ND	0.0099	0.0022	1.00	
Dibenz (a,h) Anthracene	ND	0.0099	0.0019	1.00	
Fluorene	ND	0.0099	0.0031	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.0099	0.0016	1.00	
Phenanthrene	0.0030	0.0099	0.0022	1.00	J
Pyrene	ND	0.0099	0.0022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	90	14-146	
Nitrobenzene-d5	46	18-162	
p-Terphenyl-d14	97	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	mg/kg
Project: Colorado Lagoon / 160548-07.01			Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F2-170711	**17-07-0490-2-AA**	**07/11/17 12:15**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/25/17 19:14**	**170720L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.010	0.0018	1.00	
Anthracene	ND	0.010	0.0035	1.00	
Benzo (a) Anthracene	ND	0.010	0.0022	1.00	
Benzo (a) Pyrene	ND	0.010	0.0018	1.00	
Benzo (b) Fluoranthene	ND	0.010	0.0027	1.00	
Benzo (g,h,i) Perylene	ND	0.010	0.0015	1.00	
Benzo (k) Fluoranthene	ND	0.010	0.0028	1.00	
Chrysene	ND	0.010	0.0022	1.00	
Dibenz (a,h) Anthracene	ND	0.010	0.0020	1.00	
Fluorene	ND	0.010	0.0031	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.010	0.0016	1.00	
Phenanthrene	ND	0.010	0.0022	1.00	
Pyrene	ND	0.010	0.0022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	91	14-146	
Nitrobenzene-d5	44	18-162	
p-Terphenyl-d14	100	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
		Units:	mg/kg
Project: Colorado Lagoon / 160548-07.01			Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-788-15**	**N/A**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/25/17 17:17**	**170720L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acenaphthylene	ND	0.010	0.0018	1.00	
Anthracene	ND	0.010	0.0035	1.00	
Benzo (a) Anthracene	ND	0.010	0.0022	1.00	
Benzo (a) Pyrene	ND	0.010	0.0018	1.00	
Benzo (b) Fluoranthene	ND	0.010	0.0027	1.00	
Benzo (g,h,i) Perylene	ND	0.010	0.0015	1.00	
Benzo (k) Fluoranthene	ND	0.010	0.0028	1.00	
Chrysene	ND	0.010	0.0022	1.00	
Dibenz (a,h) Anthracene	ND	0.010	0.0020	1.00	
Fluorene	ND	0.010	0.0031	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.010	0.0016	1.00	
Phenanthrene	ND	0.010	0.0022	1.00	
Pyrene	ND	0.010	0.0022	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	88	14-146	
Nitrobenzene-d5	58	18-162	
p-Terphenyl-d14	86	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 1 of 6

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F1-170711	**17-07-0490-1-AA**	**07/11/17 12:05**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/25/17 15:30**	**170720L06**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.070	1.00	
PCB028	0.25	0.20	0.033	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.45	0.20	0.086	1.00	
PCB049	0.35	0.20	0.11	1.00	
PCB052	0.63	0.20	0.062	1.00	
PCB066	0.98	0.20	0.10	1.00	
PCB070	0.59	0.20	0.059	1.00	
PCB074	0.38	0.20	0.086	1.00	
PCB077	ND	0.20	0.077	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	0.76	0.20	0.11	1.00	
PCB099	1.5	0.20	0.060	1.00	
PCB101	2.3	0.20	0.097	1.00	
PCB105	0.74	0.20	0.054	1.00	
PCB110	1.5	0.20	0.045	1.00	
PCB114	ND	0.20	0.081	1.00	
PCB118	2.4	0.20	0.083	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.079	1.00	
PCB128	0.62	0.20	0.10	1.00	
PCB132/153	5.1	0.40	0.17	1.00	
PCB138/158	3.6	0.40	0.093	1.00	
PCB149	1.8	0.20	0.097	1.00	
PCB151	0.52	0.20	0.067	1.00	
PCB156	0.25	0.20	0.057	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.061	1.00	
PCB168	ND	0.20	0.048	1.00	
PCB169	ND	0.20	0.060	1.00	
PCB170	0.62	0.20	0.063	1.00	
PCB177	0.46	0.20	0.086	1.00	
PCB180	1.5	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 2 of 6

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	0.53	0.20	0.11	1.00	
PCB187	1.4	0.20	0.083	1.00	
PCB189	ND	0.20	0.060	1.00	
PCB194	0.40	0.20	0.11	1.00	
PCB201	ND	0.20	0.096	1.00	
PCB206	0.23	0.20	0.19	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	80	14-146	
p-Terphenyl-d14	105	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 3 of 6

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
F2-170711	**17-07-0490-2-AA**	**07/11/17 12:15**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/25/17 15:54**	**170720L06**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	0.31	0.20	0.087	1.00	
PCB049	0.39	0.20	0.11	1.00	
PCB052	0.95	0.20	0.063	1.00	
PCB066	1.5	0.20	0.10	1.00	
PCB070	0.89	0.20	0.060	1.00	
PCB074	0.66	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	1.1	0.20	0.11	1.00	
PCB099	2.4	0.20	0.061	1.00	
PCB101	3.4	0.20	0.098	1.00	
PCB105	1.1	0.20	0.055	1.00	
PCB110	2.5	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	4.0	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	0.99	0.20	0.10	1.00	
PCB132/153	8.5	0.40	0.17	1.00	
PCB138/158	6.4	0.40	0.094	1.00	
PCB149	3.1	0.20	0.098	1.00	
PCB151	0.80	0.20	0.067	1.00	
PCB156	0.49	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	0.33	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	0.75	0.20	0.063	1.00	
PCB177	0.57	0.20	0.087	1.00	
PCB180	1.9	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 4 of 6

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	0.70	0.20	0.11	1.00	
PCB187	1.9	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	0.45	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	82	14-146	
p-Terphenyl-d14	106	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 5 of 6

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-780-37**	**N/A**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/24/17 14:56**	**170720L06**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
PCB018	ND	0.20	0.071	1.00	
PCB028	ND	0.20	0.034	1.00	
PCB037	ND	0.20	0.060	1.00	
PCB044	ND	0.20	0.087	1.00	
PCB049	ND	0.20	0.11	1.00	
PCB052	ND	0.20	0.063	1.00	
PCB066	ND	0.20	0.10	1.00	
PCB070	ND	0.20	0.060	1.00	
PCB074	ND	0.20	0.087	1.00	
PCB077	ND	0.20	0.078	1.00	
PCB081	ND	0.20	0.12	1.00	
PCB087	ND	0.20	0.11	1.00	
PCB099	ND	0.20	0.061	1.00	
PCB101	ND	0.20	0.098	1.00	
PCB105	ND	0.20	0.055	1.00	
PCB110	ND	0.20	0.046	1.00	
PCB114	ND	0.20	0.082	1.00	
PCB118	ND	0.20	0.084	1.00	
PCB119	ND	0.20	0.094	1.00	
PCB123	ND	0.20	0.10	1.00	
PCB126	ND	0.20	0.080	1.00	
PCB128	ND	0.20	0.10	1.00	
PCB132/153	ND	0.40	0.17	1.00	
PCB138/158	ND	0.40	0.094	1.00	
PCB149	ND	0.20	0.098	1.00	
PCB151	ND	0.20	0.067	1.00	
PCB156	ND	0.20	0.058	1.00	
PCB157	ND	0.20	0.052	1.00	
PCB167	ND	0.20	0.062	1.00	
PCB168	ND	0.20	0.049	1.00	
PCB169	ND	0.20	0.061	1.00	
PCB170	ND	0.20	0.063	1.00	
PCB177	ND	0.20	0.087	1.00	
PCB180	ND	0.20	0.042	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

eurofins | Calscience

Analytical Report

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Colorado Lagoon / 160548-07.01			Page 6 of 6

Parameter	Result	RL	MDL	DF	Qualifiers
PCB183	ND	0.20	0.11	1.00	
PCB187	ND	0.20	0.084	1.00	
PCB189	ND	0.20	0.061	1.00	
PCB194	ND	0.20	0.11	1.00	
PCB201	ND	0.20	0.097	1.00	
PCB206	ND	0.20	0.19	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	79	14-146	
p-Terphenyl-d14	103	34-148	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
Project: Colorado Lagoon / 160548-07.01			Page 1 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
F2-170711	**Sample**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 18:11**	**170720S20**
F2-170711	**Matrix Spike**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 19:19**	**170720S20**
F2-170711	**Matrix Spike Duplicate**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 19:35**	**170720S20**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alpha Chlordane	1.607	5.000	5.757	83	6.640	101	25-200	14	0-25	
4,4'-DDD	2.352	5.000	8.335	120	8.441	122	25-200	1	0-25	
4,4'-DDE	29.28	5.000	33.40	82	35.76	130	25-200	7	0-25	
4,4'-DDT	ND	5.000	1.552	31	1.941	39	25-200	22	0-25	
Dieldrin	ND	5.000	0	0	0	0	25-200	0	0-25	3
Gamma Chlordane	ND	5.000	5.696	114	5.016	100	25-200	13	0-25	
Gamma-BHC	ND	5.000	4.700	94	4.386	88	25-200	7	0-25	
Heptachlor	ND	5.000	5.706	114	5.385	108	25-200	6	0-25	
Heptachlor Epoxide	ND	5.000	5.474	109	4.951	99	25-200	10	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
Project: Colorado Lagoon / 160548-07.01			Page 2 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
F1-170711	**Sample**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/25/17 18:55**	**170720S05**
F1-170711	**Matrix Spike**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/26/17 13:21**	**170720S05**
F1-170711	**Matrix Spike Duplicate**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/26/17 13:40**	**170720S05**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acenaphthylene	ND	0.1000	0.07341	73	0.08980	90	40-160	20	0-20	
Anthracene	ND	0.1000	0.08538	85	0.1017	102	40-160	17	0-20	
Benzo (a) Anthracene	ND	0.1000	0.08977	90	0.1077	108	40-160	18	0-20	
Benzo (a) Pyrene	ND	0.1000	0.08482	85	0.1019	102	40-160	18	0-20	
Benzo (b) Fluoranthene	ND	0.1000	0.08896	89	0.1059	106	40-160	17	0-20	
Benzo (g,h,i) Perylene	ND	0.1000	0.08514	85	0.09930	99	40-160	15	0-20	
Benzo (k) Fluoranthene	ND	0.1000	0.07994	80	0.09491	95	40-160	17	0-20	
Chrysene	ND	0.1000	0.07856	79	0.08995	90	40-160	14	0-20	
Dibenz (a,h) Anthracene	ND	0.1000	0.08820	88	0.1054	105	40-160	18	0-20	
Fluorene	ND	0.1000	0.07598	76	0.09280	93	40-160	20	0-20	
Indeno (1,2,3-c,d) Pyrene	ND	0.1000	0.08450	84	0.09821	98	40-160	15	0-20	
Phenanthrene	ND	0.1000	0.08441	84	0.1002	100	40-160	17	0-20	
Pyrene	ND	0.1000	0.09013	90	0.1119	112	40-160	22	0-46	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
Project: Colorado Lagoon / 160548-07.01			Page 3 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
F2-170711	**Sample**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/25/17 15:54**	**170720S06**
F2-170711	**Matrix Spike**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/25/17 14:43**	**170720S06**
F2-170711	**Matrix Spike Duplicate**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/25/17 15:07**	**170720S06**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
PCB018	ND	50.00	39.37	79	40.77	82	50-150	3	0-25	
PCB028	ND	50.00	45.20	90	46.68	93	50-150	3	0-25	
PCB044	0.3053	50.00	45.49	90	47.42	94	50-150	4	0-25	
PCB052	0.9529	50.00	41.21	81	42.46	83	50-150	3	0-25	
PCB066	1.450	50.00	51.54	100	54.04	105	50-150	5	0-25	
PCB077	ND	50.00	52.16	104	54.75	110	50-150	5	0-25	
PCB101	3.421	50.00	49.32	92	51.40	96	50-150	4	0-25	
PCB105	1.108	50.00	56.45	111	57.91	114	50-150	3	0-25	
PCB118	3.981	50.00	58.23	108	58.20	108	50-150	0	0-25	
PCB126	ND	50.00	55.42	111	58.54	117	50-150	5	0-25	
PCB128	0.9856	50.00	54.13	106	56.76	112	50-150	5	0-25	
PCB170	0.7511	50.00	46.71	92	49.55	98	50-150	6	0-25	
PCB180	1.852	50.00	61.66	120	64.85	126	50-150	5	0-25	
PCB187	1.918	50.00	57.11	110	59.57	115	50-150	4	0-25	
PCB206	ND	50.00	45.77	92	47.80	96	50-150	4	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	MeCl2 Ext. (NOAA 1993a)
Project: Colorado Lagoon / 160548-07.01			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
F2-170711	**Sample**	**Tissue**	**N/A**	**07/20/17 00:00**	**07/21/17 00:00**	**170720D08**
F2-170711	**Sample Duplicate**	**Tissue**	**N/A**	**07/20/17 00:00**	**07/21/17 00:00**	**170720D08**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
% Lipids	1.632	1.572	4	0-25	

RPD: Relative Percent Difference. CL: Control Limits

Return to Contents

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Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C PEST-SIM
Project: Colorado Lagoon / 160548-07.01			Page 1 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-790-16	**LCS**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 14:23**	**170720L20**
099-16-790-16	**LCSD**	**Tissue**	**GC/MS BBB**	**07/20/17**	**07/25/17 14:39**	**170720L20**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alpha Chlordane	5.000	4.098	82	4.741	95	25-200	15	0-25	
4,4'-DDD	5.000	4.580	92	5.394	108	25-200	16	0-25	
4,4'-DDE	5.000	4.398	88	5.034	101	25-200	13	0-25	
4,4'-DDT	5.000	4.203	84	4.997	100	25-200	17	0-25	
Dieldrin	5.000	4.665	93	5.275	105	25-200	12	0-25	
Gamma Chlordane	5.000	4.174	83	4.904	98	25-200	16	0-25	
Gamma-BHC	5.000	4.356	87	4.988	100	25-200	14	0-25	
Heptachlor	5.000	4.723	94	5.329	107	25-200	12	0-25	
Heptachlor Epoxide	5.000	4.441	89	5.145	103	25-200	15	0-25	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PAHs
Project: Colorado Lagoon / 160548-07.01			Page 2 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-788-15	**LCS**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/25/17 17:37**	**170720L05**
099-16-788-15	**LCSD**	**Tissue**	**GC/MS AAA**	**07/20/17**	**07/25/17 17:56**	**170720L05**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Acenaphthylene	0.1000	0.09483	95	0.09362	94	40-160	20-180	1	0-20	
Anthracene	0.1000	0.09809	98	0.09857	99	40-160	20-180	0	0-20	
Benzo (a) Anthracene	0.1000	0.1141	114	0.1121	112	40-160	20-180	2	0-20	
Benzo (a) Pyrene	0.1000	0.1059	106	0.1094	109	40-160	20-180	3	0-20	
Benzo (b) Fluoranthene	0.1000	0.1195	120	0.1206	121	40-160	20-180	1	0-20	
Benzo (g,h,i) Perylene	0.1000	0.1028	103	0.1025	102	40-160	20-180	0	0-20	
Benzo (k) Fluoranthene	0.1000	0.1007	101	0.1086	109	40-160	20-180	8	0-20	
Chrysene	0.1000	0.1087	109	0.1055	106	40-160	20-180	3	0-20	
Dibenz (a,h) Anthracene	0.1000	0.1106	111	0.1098	110	40-160	20-180	1	0-20	
Fluorene	0.1000	0.1028	103	0.1004	100	40-160	20-180	2	0-20	
Indeno (1,2,3-c,d) Pyrene	0.1000	0.08277	83	0.08075	81	40-160	20-180	2	0-20	
Phenanthrene	0.1000	0.1053	105	0.1064	106	40-160	20-180	1	0-20	
Pyrene	0.1000	0.1216	122	0.1139	114	40-160	20-180	7	0-16	

Total number of LCS compounds: 13
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

ANCHOR QEA, LLC		Date Received:	07/11/17
27201 Puerta Real, Suite 350		Work Order:	17-07-0490
Mission Viejo, CA 92691-8306		Preparation:	EPA 3541
		Method:	EPA 8270C SIM PCB Congeners
Project: Colorado Lagoon / 160548-07.01			Page 3 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-780-37	**LCS**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/24/17 15:20**	**170720L06**
099-16-780-37	**LCSD**	**Tissue**	**GC/MS HHH**	**07/20/17**	**07/24/17 15:44**	**170720L06**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
PCB018	50.00	33.78	68	37.81	76	50-150	33-167	11	0-25	
PCB028	50.00	35.46	71	39.69	79	50-150	33-167	11	0-25	
PCB044	50.00	36.10	72	40.38	81	50-150	33-167	11	0-25	
PCB052	50.00	32.04	64	35.76	72	50-150	33-167	11	0-25	
PCB066	50.00	40.64	81	45.46	91	50-150	33-167	11	0-25	
PCB077	50.00	40.88	82	45.61	91	50-150	33-167	11	0-25	
PCB101	50.00	36.55	73	40.57	81	50-150	33-167	10	0-25	
PCB105	50.00	43.48	87	48.77	98	50-150	33-167	11	0-25	
PCB118	50.00	43.02	86	47.53	95	50-150	33-167	10	0-25	
PCB126	50.00	42.44	85	47.35	95	50-150	33-167	11	0-25	
PCB128	50.00	40.67	81	45.40	91	50-150	33-167	11	0-25	
PCB170	50.00	37.24	74	42.08	84	50-150	33-167	12	0-25	
PCB180	50.00	46.35	93	51.70	103	50-150	33-167	11	0-25	
PCB187	50.00	43.08	86	47.10	94	50-150	33-167	9	0-25	
PCB206	50.00	38.23	76	42.68	85	50-150	33-167	11	0-25	

Total number of LCS compounds: 15
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Glossary of Terms and Qualifiers

Work Order: 17-07-0490 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Return to Contents

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7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY: **17-07-0490**

DATE: 7/11/17

PAGE: 1 OF 1

LABORATORY CLIENT: Anchor QEA

ADDRESS: 27201 Puerta Real, Suite 350

CITY: Mission Viejo STATE: CA ZIP: 92691

TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Colorado Lagoon

P.O. NO.: 160548-07.01

PROJECT CONTACT: Chris Osuch

SAMPLER(S): (PRINT) C. Dolphin

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

Report down to the MDL

Samples processed in accordance with Colorado Lagoon TMDL Monitoring Plan

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	NOAA 1993a Lipids	EPA 8270C SIM PCB Congeners	EPA 8270C SIM PAHs	EPA 8270C SIM Pesticides	~~MS/MSD~~
1	F1-170711	7/11/17	1205	Tissue	1	X			X	X	X	X	
2	F2-170711	7/11/17	1215	Tissue	1	X			X	X	X	X	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
[signature]	[signature]	7/11/17	1245
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision

Return to Contents

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WORK ORDER NUMBER: 17-07- 0490

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: Anchor QEA

DATE: 07 / 11 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.6 °C (w/ CF): 2.8 °C; ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 836

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 836
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 8N2

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☐	☐	☑
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: **(Trip Blank Lot Number:** _____**)**

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☐ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☐ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** ☐ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (Tissue): ☑ Z ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 8N2

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: 78

Return to Contents

Attachment D
Toxicity Laboratory Report

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS1-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.012

CHRONIC EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Aug-17 14:26 (p 1 of 1)
Test Code: ANC0717.012e | 11-8119-1396

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	13-7812-1402	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:00	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:00	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	09-0861-0712	**Code:**	ANC0717.012e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 13:29	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	14d	**Station:**	WS1-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
17-8719-2280	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.7778	100% passed survival rate

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
17-8719-2280	Survival Rate	Control Resp	0.99	0.9	>>	Yes	Passes Criteria

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%
100		5	0.9900	0.9622	1.0000	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		1.0000	0.9500	1.0000	1.0000	1.0000

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	20/20	20/20	19/20	20/20	20/20
100		20/20	19/20	20/20	20/20	20/20

CETIS Analytical Report

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	17-8719-2280	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 13:52	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	13-7812-1402	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:00	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:00	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	09-0861-0712	**Code:**	ANC0717.012e	**Client:**	Anchor OEA
Sample Date:	06 Jul-17 13:29	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	14d	**Station:**	WS1-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed survival rate	2.76%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	0.99	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0206028	0.0025754	8			
Total	0.0206028		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0	11.26	1.0000	Equal Variances
Variances	Mod Levene Equality of Variance Test	0	13.75	1.0000	Equal Variances
Variances	Variance Ratio F Test	1	23.15	1.0000	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	2.912	3.878	<1.0E-37	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	2.495	2.576	0.0126	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.4824	0.3025	2.2E-07	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.5093	0.7411	4.7E-06	Non-Normal Distribution

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	1.0000	0.9500	1.0000	0.0100	2.26%	0.00%
100		5	0.9900	0.9622	1.0000	1.0000	0.9500	1.0000	0.0100	2.26%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.436	1.373	1.499	1.459	1.345	1.459	0.02269	3.53%	0.00%
100		5	1.436	1.373	1.499	1.459	1.345	1.459	0.02269	3.53%	0.00%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		1.0000	0.9500	1.0000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.459	1.459	1.345	1.459	1.459
100		1.459	1.345	1.459	1.459	1.459

Analysis ID:	17-8719-2280	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 13:52	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	13-7812-1402	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:00	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:00	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	09-0861-0712	**Code:**	ANC0717.012e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 13:29	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	14d	**Station:**	WS1-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.05001	0.07073	0.7%	0
100		2	10.05	9.415	10.69	10	10.1	0.05001	0.07073	0.7%	0
Overall		4	10.05	9.958	10.14	10	10.1	0.02887	0.05774	0.57%	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
100		2	7.75	7.115	8.385	7.7	7.8	0.05001	0.07072	0.91%	0
Overall		4	7.825	7.673	7.977	7 7	7.9	0.04787	0.09574	1.22%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	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	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
100		2	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
Overall		4	14.8	14.62	14.98	14.7	14.9	0.05773	0.1155	0.78%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	10.1	10
100		10	10 1

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		7.8	7.7

Salinity-ppt

Conc-%	Code	1	2
0	N	20	20
100		20	20

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.9
100		14.7	14.9

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS2-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.013

CHRONIC EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Aug-17 14:27 (p 1 of 1)
Test Code: ANC0717.013e | 20-1409-0817

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	17-6488-9980	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:01	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:01	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	07-7511-7116	**Code:**	ANC0717.013e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 17:43	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	13d 19h	**Station:**	WS2-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-7782-4814	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.5000	100% passed survival rate

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
05-7782-4814	Survival Rate	Control Resp	0.99	0.9	>>	Yes	Passes Criteria

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%
100		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	1.01%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		1.0000	1.0000	0.9000	1.0000	1.0000

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	20/20	20/20	19/20	20/20	20/20
100		20/20	20/20	18/20	20/20	20/20

CETIS Analytical Report

Report Date: 16 Aug-17 14:27 (p 1 of 2)
Test Code: ANC0717.013e | 20-1409-0817

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	05-7782-4814	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 13:55	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	17-6488-9980	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:01	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:01	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	07-7511-7116	**Code:**	ANC0717.013e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 17:43	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	13d 19h	**Station:**	WS2-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed survival rate	3.95%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	27	n/a	1	8	Exact	0.5000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	0.99	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0009262	0.0009262	1	0.1629	0.6971	Non-Significant Effect
Error	0.045485	0.0056856	8			
Total	0.0464112		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	1.158	11.26	0.3132	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.1629	13.75	0.7005	Equal Variances
Variances	Variance Ratio F Test	3.415	23.15	0.2613	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.957	3.878	<1.0E-37	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	2.74	2.576	0.0062	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.4252	0.3025	1.2E-05	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.6389	0.7411	1.6E-04	Non-Normal Distribution

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	1.0000	0.9500	1.0000	0.0100	2.26%	0.00%
100		5	0.9800	0.9245	1.0000	1.0000	0.9000	1.0000	0.0200	4.56%	1.01%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.436	1.373	1.499	1.459	1.345	1.459	0.02269	3.53%	0.00%
100		5	1.417	1.3	1.533	1.459	1.249	1.459	0.04194	6.62%	1.34%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		1.0000	1.0000	0.9000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.459	1.459	1.345	1.459	1.459
100		1.459	1.459	1.249	1.459	1.459

Analysis ID:	05-7782-4814	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 13:55	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	17-6488-9980	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:01	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:01	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	07-7511-7116	**Code:**	ANC0717.013e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 17:43	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	13d 19h	**Station:**	WS2-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.05001	0.07073	0.7%	0
100		2	10.15	9.515	10.79	10.1	10.2	0.05	0.0707	0.7%	0
Overall		4	10.1	9.97	10.23	10	10.2	0.04082	0.08165	0.81%	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
100		2	7.75	7.115	8.385	7.7	7.8	0.05001	0.07072	0.91%	0
Overall		4	7.825	7.673	7.977	7.7	7.9	0.04787	0.09574	1.22%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	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	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
100		2	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
Overall		4	14.8	14.62	14.98	14.7	14.9	0.05773	0.1155	0.78%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	10.1	10
100		10.1	10.2

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		7.8	7.7

Salinity-ppt

Conc-%	Code	1	2
0	N	20	20
100		20	20

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.9
100		14.7	14.9

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS3-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.014

CHRONIC EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date:	16 Aug-17 14:27 (p 1 of 1)
Test Code:	ANC0717.014e | 17-9267-1617

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	07-8360-8448	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:03	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:03	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	14-5610-9439	**Code:**	ANC0717.014e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 16:00	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	13d 21h	**Station:**	WS3-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
04-1317-9162	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.5000	100% passed survival rate

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
04-1317-9162	Survival Rate	Control Resp	0.99	0.9	>>	Yes	Passes Criteria

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%
100		5	0.9800	0.9460	1.0000	0.9500	1.0000	0.0123	0.0274	2.79%	1.01%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		0.9500	1.0000	1.0000	1.0000	0.9500

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	20/20	20/20	19/20	20/20	20/20
100		19/20	20/20	20/20	20/20	19/20

CETIS Analytical Report

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	04-1317-9162	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 13:58	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	07-8360-8448	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:03	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:03	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	14-5610-9439	**Code:**	ANC0717 014e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 16:00	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	13d 21h	**Station:**	WS3-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed survival rate	3.03%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	25	n/a	2	8	Exact	0.5000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	0.99	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0012877	0.0012877	1	0.4	0.5447	Non-Significant Effect
Error	0.0257535	0.0032192	8			
Total	0.0270412		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	1.524	11.26	0.2521	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.4286	13.75	0.5370	Equal Variances
Variances	Variance Ratio F Test	1.5	23.15	0.7040	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.329	3.878	0.0014	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	1.407	2.576	0.1594	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.3643	0.3025	4.8E-04	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.7586	0.7411	0.0045	Non-Normal Distribution

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	1.0000	0.9500	1.0000	0.0100	2.26%	0.00%
100		5	0.9800	0.9460	1.0000	1.0000	0.9500	1.0000	0.0123	2.79%	1.01%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.436	1.373	1.499	1.459	1.345	1.459	0.02269	3.53%	0.00%
100		5	1.413	1.336	1.491	1.459	1.345	1.459	0.0278	4.40%	1.58%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		0.9500	1.0000	1.0000	1.0000	0.9500

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.459	1.459	1.345	1.459	1.459
100		1.345	1.459	1.459	1.459	1.345

Analysis ID:	04-1317-9162	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 13:58	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	07-8360-8448	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:03	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:03	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	14-5610-9439	**Code:**	ANC0717.014e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 16:00	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	13d 21h	**Station:**	WS3-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.05001	0.07073	0.7%	0
100		2	10.1	10.08	10.12	10.1	10.1	0	0	0.0%	0
Overall		4	10.08	9.995	10.15	10	10.1	0.025	0.05	0.50%	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
100		2	7.9	5.359	10.44	7.7	8.1	0.2	0.2828	3.58%	0
Overall		4	7.9	7.64	8.16	7.7	8.1	0.08165	0.1633	2.07%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	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	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
100		2	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
Overall		4	14.8	14.62	14.98	14.7	14.9	0.05773	0.1155	0.78%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	10.1	10
100		10.1	10.1

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		8.1	7.7

Salinity-ppt

Conc-%	Code	1	2
0	N	20	20
100		20	20

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.9
100		14.7	14.9

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS4-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.015

CHRONIC EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Aug-17 14:27 (p 1 of 1)
Test Code: ANC0717.015e | 08-1573-8889

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	16-4921-2452	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:04	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:04	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	00-8000-2457	**Code:**	ANC0717.015e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 09:50	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	14d 3h	**Station:**	WS4-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
17-6103-7547	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.5000	100% passed survival rate

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
17-6103-7547	Survival Rate	Control Resp	0.99	0.9	>>	Yes	Passes Criteria

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%
100		5	0.9800	0.9460	1.0000	0.9500	1.0000	0.0123	0.0274	2.79%	1.01%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		0.9500	1.0000	0.9500	1.0000	1.0000

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	20/20	20/20	19/20	20/20	20/20
100		19/20	20/20	19/20	20/20	20/20

CETIS Analytical Report

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	17-6103-7547	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 14:02	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Batch ID:	16-4921-2452	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:04	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:04	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	00-8000-2457	**Code:**	ANC0717.015e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 09:50	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	14d 3h	**Station:**	WS4-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed survival rate	3.03%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	25	n/a	2	8	Exact	0.5000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	0.99	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0012877	0.0012877	1	0.4	0.5447	Non-Significant Effect
Error	0.0257535	0.0032192	8			
Total	0.0270412		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	1.524	11.26	0.2521	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.4286	13.75	0.5370	Equal Variances
Variances	Variance Ratio F Test	1.5	23.15	0.7040	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.329	3.878	0.0014	Non-Normal Distribution
Distribution	D'Agostino Skewness Test	1.407	2.576	0.1594	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.3643	0.3025	4.8E-04	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.7586	0.7411	0.0045	Non-Normal Distribution

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000	1.0000	0.9500	1.0000	0.0100	2.26%	0.00%
100		5	0.9800	0.9460	1.0000	1.0000	0.9500	1.0000	0.0123	2.79%	1.01%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.436	1.373	1.499	1.459	1.345	1.459	0.02269	3.53%	0.00%
100		5	1.413	1.336	1.491	1.459	1.345	1.459	0.0278	4.40%	1.58%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	0.9500	1.0000	1.0000
100		0.9500	1.0000	0.9500	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.459	1.459	1.345	1.459	1.459
100		1.345	1.459	1.345	1.459	1.459

Analysis ID:	17-6103-7547	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 14:02	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Report Date: 16 Aug-17 14:27 (p 1 of 1)
Test Code: ANC0717.015e | 08-1573-8889

Eohaustorius 10-d Survival and Reburial Sediment Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	16-4921-2452	**Test Type:**	Survival-Reburial	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:04	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	30 Jul-17 13:04	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	10d 0h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	00-8000-2457	**Code:**	ANC0717.015e	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 09:50	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	14d 3h	**Station:**	WS4-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.05001	0.07073	0.7%	0
100		2	10.2	8.929	11.47	10.1	10.3	0.1	0.1414	1.39%	0
Overall		4	10.13	9.925	10.33	10	10.3	0.06292	0.1258	1.24%	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
100		2	7.9	6.629	9.171	7.8	8	0.1	0.1414	1.79%	0
Overall		4	7.9	7.77	8.03	7.8	8	0.04082	0.08165	1.03%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	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	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
100		2	14.8	13.53	16.07	14.7	14.9	0.1	0.1414	0.96%	0
Overall		4	14.8	14.62	14.98	14.7	14.9	0.05773	0.1155	0.78%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	10.1	10
100		10.3	10.1

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		8	7.8

Salinity-ppt

Conc-%	Code	1	2
0	N	20	20
100		20	20

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.9
100		14.7	14.9

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

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.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS1-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.016

CHRONIC MYTILUS SEDIMENT WATER INTERFACE BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date:	16 Aug-17 14:33 (p 1 of 1)
Test Code:	ANC0717.016m | 18-6481-6654

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	16-2003-1684	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:00	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	06-5856-5914	**Code:**	ANC0717.016m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 13:50	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 23h	**Station:**	WS1-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
07-7639-9613	Proportion Normal	Equal Variance t Two-Sample Test	0.8604	100% passed proportion normal

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9579	0.9860	0.0050	0.0112	1.15%	0.00%
100		5	0.9794	0.9638	0.9951	0.9626	0.9953	0.0056	0.0126	1.29%	-0.87%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9953	0.9813	0.9626	0.9720	0.9860

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	206/214	208/214	205/214	209/214
100		213/214	210/214	206/214	208/214	211/214

CETIS Analytical Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	07-7639-9613	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 10:45	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	16-2003-1684	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:00	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	06-5856-5914	**Code:**	ANC0717.016m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 13:50	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 23h	**Station:**	WS1-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed proportion normal	1.82%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	-1.161	1.86	0.049	8	CDF	0.8604	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0023851	0.0023851	1	1.347	0.2792	Non-Significant Effect
Error	0.0141647	0.0017706	8			
Total	0.0165498		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.3799	11.26	0.5548	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.7164	13.75	0.4298	Equal Variances
Variances	Variance Ratio F Test	1.929	23.15	0.5400	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.2329	3.878	0.8278	Normal Distribution
Distribution	D'Agostino Skewness Test	0.5696	2.576	0.5690	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1461	0.3025	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9658	0.7411	0.8496	Normal Distribution

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9720	0.9579	0.9860	0.0050	1.15%	0.00%
100		5	0.9794	0.9638	0.9951	0.9813	0.9626	0.9953	0.0056	1.29%	-0.87%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.402	1.359	1.446	1.403	1.364	1.452	0.01555	2.48%	0.00%
100		5	1.433	1.373	1.493	1.434	1.376	1.502	0.0216	3.37%	-2.20%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9953	0.9813	0.9626	0.9720	0.9860

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.452	1.376	1.403	1.364	1.417
100		1.502	1.434	1.376	1.403	1.452

Analysis ID:	07-7639-9613	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 10:45	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Report Date: 16 Aug-17 14:33 (p 1 of 1)
Test Code: ANC0717.016m | 18-6481-6654

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	16-2003-1684	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:00	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:00	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	06-5856-5914	**Code:**	ANC0717.016m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 13:50	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 23h	**Station:**	WS1-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
100		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
Overall		4	6.425	5.899	6.951	6.1	6.8	0.1652	0.3304	5.14%	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
100		2	8.15	6.244	10.06	8	8.3	0.15	0.2121	2.6%	0
Overall		4	8.025	7.724	8.326	7.9	8.3	0.09465	0.1893	2.36%	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
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		4	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
100		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
Overall		4	14.75	14.66	14.84	14.7	14.8	0.02887	0.05774	0.39%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	6.8	6.2
100		6.6	6.1

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		8.3	8

Salinity-ppt

Conc-%	Code	1	2
0	N	34	34
100		34	34

Temperature-°C

Conc-%	Code	1	2
0	N	14 7	14.8
100		14.7	14.8

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

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.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS2-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.017

CHRONIC MYTILUS SEDIMENT WATER INTERFACE BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date:	16 Aug-17 14:33 (p 1 of 1)
Test Code:	ANC0717.017M | 09-3946-0110

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-1488-1170	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:01	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	07-7647-7333	**Code:**	ANC0717 017m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 18:07	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 19h	**Station:**	WS2-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
11-1680-1026	Proportion Normal	Equal Variance t Two-Sample Test	0.5000	100% passed proportion normal

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9579	0.9860	0.0050	0.0112	1.15%	0.00%
100		5	0.9710	0.9572	0.9849	0.9579	0.9860	0.0050	0.0112	1.15%	0.00%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9579	0.9766	0.9626	0.9720	0.9860

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	206/214	208/214	205/214	209/214
100		205/214	209/214	206/214	208/214	211/214

CETIS Analytical Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	11-1680-1026	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:20	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	09-1488-1170	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:01	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	07-7647-7333	**Code:**	ANC0717.017m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 18:07	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 19h	**Station:**	WS2-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed proportion normal	1.46%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	0	1.86	0.041	8	CDF	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0096705	0.0012088	8			
Total	0.0096705		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0	11.26	1.0000	Equal Variances
Variances	Mod Levene Equality of Variance Test	0	13.75	1.0000	Equal Variances
Variances	Variance Ratio F Test	1	23.15	1.0000	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4561	3.878	0.2712	Normal Distribution
Distribution	D'Agostino Skewness Test	0.6085	2.576	0.5428	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1886	0.3025	0.4431	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.8977	0.7411	0.2068	Normal Distribution

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9720	0.9579	0.9860	0.0050	1.15%	0.00%
100		5	0.9710	0.9572	0.9849	0.9720	0.9579	0.9860	0.0050	1.15%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.402	1.359	1.446	1.403	1.364	1.452	0.01555	2.48%	0.00%
100		5	1.402	1.359	1.446	1.403	1.364	1.452	0.01555	2.48%	0.00%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9579	0.9766	0.9626	0.9720	0.9860

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.452	1.376	1.403	1.364	1.417
100		1.364	1.417	1.376	1.403	1.452

Analysis ID:	11-1680-1026	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:20	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	09-1488-1170	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:01	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:01	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	07-7647-7333	**Code:**	ANC0717.017m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 18:07	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 19h	**Station:**	WS2-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
100		2	6.05	5.415	6.685	6	6.1	0.05	0.07071	1.17%	0
Overall		4	6.275	5.703	6.847	6	6.8	0.1797	0.3594	5.73%	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
100		2	7.85	5.944	9.756	7.7	8	0.15	0.2121	2.7%	0
Overall		4	7.875	7.675	8.075	7.7	8	0.06292	0.1258	1.60%	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
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		4	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
100		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
Overall		4	14.75	14.66	14.84	14.7	14.8	0.02887	0.05774	0.39%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	6.8	6.2
100		6.1	6

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		8	7.7

Salinity-ppt

Conc-%	Code	1	2
0	N	34	34
100		34	34

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.8
100		14.7	14.8

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

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*. Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS3-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.018

CHRONIC MYTILUS SEDIMENT WATER INTERFACE BIOASSAY

NOEC	=	100.00 %
TUc	=	1.00
EC25	=	>100.00 %
EC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Aug-17 14:34 (p 1 of 1)
Test Code: ANC0717.018m | 08-9488-7516

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	01-7883-2637	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:02	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	15-8214-4440	**Code:**	ANC0717.018m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 16:00	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 21h	**Stetion:**	WS3-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-7636-4628	Proportion Normal	Equal Variance t Two-Sample Test	0.3632	100% passed proportion normal

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9579	0.9860	0.0050	0.0112	1.15%	0.00%
100		5	0.9673	0.9476	0.9870	0.9439	0.9860	0.0071	0.0159	1.64%	0.38%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9673	0.9439	0.9766	0.9626	0.9860

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	206/214	208/214	205/214	209/214
100		207/214	202/214	209/214	206/214	211/214

Mussel Shell Development Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	05-7636-4628	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:24	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	01-7883-2637	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:02	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	15-8214-4440	**Code:**	ANC0717.018m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 16:00	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 21h	**Station:**	WS3-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed proportion normal	1.73%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	0.3624	1.86	0.047	8	CDF	0.3632	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0002130	0.0002130	1	0.1314	0.7264	Non-Significant Effect
Error	0.0129749	0.0016219	8			
Total	0.0131879		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.2615	11.26	0.6229	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.3323	13.75	0.5853	Equal Variances
Variances	Variance Ratio F Test	1.683	23.15	0.6262	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.1405	3.878	0.9999	Normal Distribution
Distribution	D'Agostino Skewness Test	0.1186	2.576	0.9056	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1044	0.3025	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9817	0.7411	0.9735	Normal Distribution

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9720	0.9579	0.9860	0.0050	1.15%	0.00%
100		5	0.9673	0.9476	0.9870	0.9673	0.9439	0.9860	0.0071	1.64%	0.38%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.402	1.359	1.446	1.403	1.364	1.452	0.01555	2.48%	0.00%
100		5	1.393	1.337	1.449	1.389	1.332	1.452	0.02017	3.24%	0.66%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9673	0.9439	0.9766	0.9626	0.9860

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.452	1.376	1.403	1.364	1.417
100		1.389	1.332	1.417	1.376	1.452

Analysis ID:	05-7636-4628	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:24	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	01-7883-2637	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:02	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:02	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	15-8214-4440	**Code:**	ANC0717.018m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 16:00	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	4d 21h	**Station:**	WS3-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
100		2	6.45	2.003	10.9	6.1	6.8	0.35	0.495	7.67%	0
Overall		4	6.475	5.874	7.076	6.1	6.8	0.1887	0.3775	5.83%	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
100		2	7.55	1.832	13.27	7.1	8	0.45	0.6364	8.43%	0
Overall		4	7.725	7.058	8.392	7.1	8	0.2097	0.4193	5.43%	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
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		4	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
100		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
Overall		4	14.75	14.66	14.84	14.7	14.8	0.02887	0.05774	0.39%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	6.8	6.2
100		6.8	6.1

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		7.1	8

Salinity-ppt

Conc-%	Code	1	2
0	N	34	34
100		34	34

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.8
100		14.7	14.8

aquatic bioassay & consulting laboratories, inc

August 16, 2017

Andrew Martin
Anchor QEA
1119 Pacific Avenue, Suite 1600
Tacoma, CA 98402

Dear Mr. Martin:

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.* Results were as follows:

CLIENT:	Anchor QEA
SAMPLE I.D.:	WS4-SS-170706
DATE RECEIVED:	7/7/2017
ABC LAB. NO.:	ANC0717.019

CHRONIC MYTILUS SEDIMENT WATER INTERFACE BIOASSAY

NOEC =	100.00 %
TUc =	1.00
EC25 =	>100.00 %
EC50 =	>100.00 %

Yours very truly,

for Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Aug-17 14:34 (p 1 of 1)
Test Code: ANC0717 019m | 05-1093-6742

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	18-2846-2115	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:04	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:04	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	09-5897-0975	**Code:**	ANC0717.019m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 07:30	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	5d 6h	**Station:**	WS4-SS-170706		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
01-7341-8390	Proportion Normal	Equal Variance t Two-Sample Test	0.6965	100% passed proportion normal

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9579	0.9860	0.0050	0.0112	1.15%	0.00%
100		5	0.9748	0.9642	0.9853	0.9626	0.9860	0.0038	0.0085	0.87%	-0.38%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9720	0.9626	0.9766	0.9860	0.9766

Proportion Normal Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	206/214	208/214	205/214	209/214
100		208/214	206/214	209/214	211/214	209/214

CETIS Analytical Report

Report Date: 16 Aug-17 14:34 (p 1 of 2)
Test Code: ANC0717.019m | 05-1093-6742

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-7341-8390	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:29	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Batch ID:	18-2846-2115	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:04	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:04	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	09-5897-0975	**Code:**	ANC0717 019m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 07:30	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	5d 6h	**Station:**	WS4-SS-170706		

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	100% passed proportion normal	1.29%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		100	-0.5354	1.86	0.037	8	CDF	0.6965	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0002818	0.0002818	1	0.2867	0.6069	Non-Significant Effect
Error	0.0078645	0.0009831	8			
Total	0 0081463		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.3412	11.26	0.5752	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6327	13.75	0.4567	Equal Variances
Variances	Variance Ratio F Test	1.596	23.15	0.6616	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.2829	3.878	0.6641	Normal Distribution
Distribution	D'Agostino Skewness Test	0.481	2.576	0.6305	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0 1432	0.3025	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9441	0.7411	0.6000	Normal Distribution

Proportion Normal Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9710	0.9572	0.9849	0.9720	0.9579	0.9860	0.0050	1.15%	0.00%
100		5	0.9748	0.9642	0.9853	0.9766	0.9626	0.9860	0.0038	0.87%	-0.38%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.402	1.359	1.446	1.403	1.364	1.452	0.01555	2.48%	0.00%
100		5	1.413	1.379	1.447	1.417	1.376	1.452	0.01231	1.95%	-0.76%

Proportion Normal Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9626	0.9720	0.9579	0.9766
100		0.9720	0.9626	0.9766	0.9860	0.9766

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.452	1.376	1.403	1.364	1.417
100		1.403	1.376	1.417	1 452	1.417

Analysis ID:	01-7341-8390	**Endpoint:**	Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:29	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

CETIS Measurement Report

Report Date: 16 Aug-17 14:34 (p 1 of 1)
Test Code: ANC0717.019m | 05-1093-6742

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	18-2846-2115	**Test Type:**	Development	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:04	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:04	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	09-5897-0975	**Code:**	ANC0717.019m	**Client:**	Anchor QEA
Sample Date:	06 Jul-17 07:30	**Material:**	Sediment	**Project:**	Colorado Lagoon TMDL Compliance
Receipt Date:	07 Jul-17 10:25	**Source:**	Bioassay Report		
Sample Age:	5d 6h	**Station:**	WS4-SS-170706		

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
100		2	6.75	4.844	8.656	6.6	6.9	0.15	0.2121	3.14%	0
Overall		4	6.625	6.132	7.118	6.2	6.9	0.1548	0.3096	4.67%	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
100		2	8.1	6.829	9.371	8	8.2	0.1	0.1414	1.75%	0
Overall		4	8	7.775	8.225	7.9	8.2	0.07071	0.1414	1.77%	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
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		4	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
100		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
Overall		4	14.75	14.66	14.84	14.7	14.8	0.02887	0.05774	0.39%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	N	6.8	6.2
100		6.9	6.6

pH-Units

Conc-%	Code	1	2
0	N	7.9	7.9
100		8.2	8

Salinity-ppt

Conc-%	Code	1	2
0	N	34	34
100		34	34

Temperature-°C

Conc-%	Code	1	2
0	N	14.7	14.8
100		14.7	14.8

Chain of Cust Record & Laboratory Analysis Request

Laboratory Number:

Date: 7/6/17
Project Name: Colorado Lagoon TMDL Compliance
Project Number: 160548-07.01
Project Manager: Chris Osuch
Phone Number: 949.347.2780
Shipment Method:

ANCHOR QEA

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Sediment Toxicity (10-Day Eoh)	Sediment Toxicity (Mytilus SWI)	Comments/Preservation
1	WS1-SS-170706	7/6/17 1329	Sed	1 ~~6~~	X	X	Eoh 12
2	WS2-SS-170706	1743	Sed	1 ~~6~~	X	X	13
3	WS3-SS-170706	1525	Sed	1 ~~6~~	X	X	14
4	WS4-SS-170706	0950	Sed	1 ~~6~~	X	X	15
5	WS1-SS-170706	7/6/17 1350	Sed	5		X	SWI, Intact cores (5) 16
6	WS2-SS-170706	1807	Sed	5		X	17
7	WS3-SS-170706	1600	Sed	5		X	18
8	WS4-SS-170706	0730	Sed	5		X	19
9							
10							
11							
12							
13							
14							
15							

Notes:

Relinquished By	Company: Anchor QEA
[illegible]	7/6/17 1905
Signature/Printed Name	Date/Time

Received By	Company: Aquatic Bioassay
[illegible] / E. Matthews	7-7-17 / 1025
Signature/Printed Name	Date/Time

Relinquished By:	Company:
Signature/Printed Name	Date/Time

Received By:	Company:
Signature/Printed Name	Date/Time

Distribution: A copy will be made for the laboratory and client. The Project file will retain the original.

aquatic bioassay & consulting laboratories, inc

96 Hour *Eohaustorius estuarius* Survival Bioassay - Standard Toxicant

DATE: 7/20/2017

STANDARD TOXICANT: Ammonium Chloride

ENDPOINT: SURVIVAL

UNIONIZED AMMONIA

NOEC = 0.4330mg/L

EC25 = 0.6677mg/L
EC50 = 1.2320mg/L

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 aquabio.org

CETIS Summary Report

Report Date:	16 Aug-17 14:26 (p 1 of 1)
Test Code:	EOH072017 | 09-4458-1879

Reference Toxicant 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	19-1287-0316	**Test Type:**	Survival	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:20	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jul-17 13:20	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	01-5589-8195	**Code:**	EOH072017	**Client:**	Internal Lab
Sample Date:	20 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-1978-0067	Survival Rate	Steel Many-One Rank Sum Test	0.433	0.785	0.583		9 08%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	mg/L	95% LCL	95% UCL	TU ✓
08-9273-5091	Survival Rate	Linear Interpolation (ICPIN)	EC5	0.324	0.2493	0.4984	
			EC10	0.433	0.2835	0 5738	
			EC15	0.5112	0.3362	0.6364	
			EC20	0.5894	0.433	0.7414	
			EC25	0.6677	0.5425	0.8554	
			EC40	0.9765	0.6701	1.16	
			EC50	1.232	1.062	1.365	

Survival Rate Summary

Conc-mg/L	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%
0.215		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.433		4	0.9000	0.7701	1 0000	0.8000	1.0000	0.0408	0.0817	9.07%	10.00%
0.785		4	0.6750	0.5227	0.8273	0.6000	0.8000	0.0479	0.0957	14.18%	32.50%
1.551		4	0.3750	0.2954	0.4546	0.3000	0.4000	0.0250	0.0500	13.33%	62.50%
4.109		4	0.1000	0.0000	0.2299	0.0000	0.2000	0.0408	0.0817	81.65%	90.00%

Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1 0000	1.0000	1.0000	1.0000
0.215		1.0000	1.0000	1.0000	1.0000
0.433		0.8000	0.9000	1.0000	0.9000
0 785		0.8000	0.6000	0.7000	0.6000
1.551		0.4000	0 3000	0.4000	0.4000
4.109		0.2000	0.1000	0.0000	0.1000

Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
0.215		10/10	10/10	10/10	10/10
0.433		8/10	9/10	10/10	9/10
0.785		8/10	6/10	7/10	6/10
1.551		4/10	3/10	4/10	4/10
4.109		2/10	1/10	0/10	1/10

CETIS Analytical Report

Report Date: 16 Aug-17 14:26 (p 1 of 2)
Test Code: EOH072017 | 09-4458-1879

Reference Toxicant 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	12-1978-0067	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 14:12	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	19-1287-0316	**Test Type:**	Survival	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:20	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jul-17 13:20	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	01-5589-8195	**Code:**	EOH072017	**Client:**	Internal Lab
Sample Date:	20 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	0.433	0.785	0.583		9.08%

Steel Many-One Rank Sum Test

Control	vs	Conc-mg/L	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		0.215	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		0.433	12	10	1	6	Asymp	0.1424	Non-Significant Effect
		0.785*	10	10	0	6	Asymp	0.0417	Significant Effect
		1.551*	10	10	0	6	Asymp	0.0417	Significant Effect
		4.109*	10	10	0	6	Asymp	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.95608	0.791216	5	105.7	<1.0E-37	Significant Effect
Error	0.134768	0.0074871	18			
Total	4.09085		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	2.122	4.248	0.1095	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.691	4.248	0.1877	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	1.908	3.878	<1.0E-37	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.157	2.576	0.2473	Normal Distribution
Distribution	D'Agostino Skewness Test	0.2877	2.576	0.7736	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.421	9.21	0.4913	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.2642	0.2056	1.4E-04	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.8629	0.884	0.0038	Non-Normal Distribution

Survival Rate Summary

Conc-mg/L	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%
0.215		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
0.433		4	0.9000	0.7701	1.0000	0.9000	0.8000	1.0000	0.0408	9.07%	10.00%
0.785		4	0.6750	0.5227	0.8273	0.6500	0.6000	0.8000	0.0479	14.18%	32.50%
1.551		4	0.3750	0.2954	0.4546	0.4000	0.3000	0.4000	0.0250	13.33%	62.50%
4.109		4	0.1000	0.0000	0.2299	0.1000	0.0000	0.2000	0.0408	81.65%	90.00%

Angular (Corrected) Transformed Summary

Conc-mg/L	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%
0.215		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
0.433		4	1.254	1.056	1.453	1.249	1.107	1.412	0.06231	9.93%	11.17%
0.785		4	0.9676	0.7999	1.135	0.9386	0.8861	1.107	0.05269	10.89%	31.47%
1.551		4	0.6584	0.5748	0.7421	0.6847	0.5796	0.6847	0.02627	7.98%	53.37%
4.109		4	0.3165	0.1182	0.5148	0.3218	0.1588	0.4636	0.06231	39.37%	77.59%

Reference Toxicant 96-h Acute Survival Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-1978-0067 **Endpoint:** Survival Rate **CETIS Version:** CETISv1.9.2
Analyzed: 16 Aug-17 14:12 **Analysis:** Nonparametric-Control vs Treatments **Official Results:** Yes

Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
0.215		1.0000	1.0000	1.0000	1.0000
0.433		0.8000	0.9000	1.0000	0.9000
0.785		0.8000	0.6000	0.7000	0.6000
1.551		0.4000	0.3000	0.4000	0.4000
4.109		0.2000	0.1000	0.0000	0.1000

Angular (Corrected) Transformed Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.412	1.412	1.412	1.412
0.215		1.412	1.412	1.412	1.412
0.433		1.107	1.249	1.412	1.249
0.785		1.107	0.8861	0.9912	0.8861
1.551		0.6847	0.5796	0.6847	0.6847
4.109		0.4636	0.3218	0.1588	0.3218

Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
0.215		10/10	10/10	10/10	10/10
0.433		8/10	9/10	10/10	9/10
0.785		8/10	6/10	7/10	6/10
1.551		4/10	3/10	4/10	4/10
4.109		2/10	1/10	0/10	1/10

Graphics

CETIS Analytical Report

Report Date: 16 Aug-17 14:26 (p 1 of 2)
Test Code: EOH072017 | 09-4458-1879

Reference Toxicant 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	08-9273-5091	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 14:13	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	19-1287-0316	**Test Type:**	Survival	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:20	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jul-17 13:20	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	01-5589-8195	**Code:**	EOH072017	**Client:**	Internal Lab
Sample Date:	20 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	mg/L	95% LCL	95% UCL
EC5	0.324	0.2493	0.4984
EC10	0.433	0.2835	0.5738
EC15	0.5112	0.3362	0.6364
EC20	0.5894	0.433	0.7414
EC25	0.6677	0.5425	0 8554
EC40	0.9765	0.6701	1 16
EC50	1.232	1.062	1.365

Survival Rate Summary — **Calculated Variate(A/B)**

Conc-mg/L	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
0.215		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
0 433		4	0.9000	0.8000	1.0000	0.0408	0.0817	9.07%	10.0%	36	40
0.785		4	0.6750	0.6000	0.8000	0.0479	0 0957	14.18%	32.5%	27	40
1.551		4	0.3750	0.3000	0.4000	0.0250	0.0500	13.33%	62.5%	15	40
4.109		4	0.1000	0.0000	0.2000	0.0408	0.0817	81.65%	90.0%	4	40

Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
0.215		1.0000	1.0000	1.0000	1.0000
0 433		0.8000	0.9000	1.0000	0.9000
0.785		0.8000	0.6000	0.7000	0.6000
1.551		0.4000	0.3000	0.4000	0.4000
4.109		0.2000	0.1000	0.0000	0.1000

Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
0.215		10/10	10/10	10/10	10/10
0.433		8/10	9/10	10/10	9/10
0.785		8/10	6/10	7/10	6/10
1 551		4/10	3/10	4/10	4/10
4.109		2/10	1/10	0/10	1/10

Reference Toxicant 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	08-9273-5091	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 14:13	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics

Reference Toxicant 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	19-1287-0316	**Test Type:**	Survival	**Analyst:**	Joe Freas
Start Date:	20 Jul-17 13:20	**Protocol:**	EPA/600/R-94/025 (1994)	**Diluent:**	Laboratory Seawater
Ending Date:	24 Jul-17 13:20	**Species:**	Eohaustorius estuarius	**Brine:**	Not Applicable
Duration:	96h	**Source:**	Northwestern Aquatic Science, OR	**Age:**	

Sample ID:	01-5589-8195	**Code:**	EOH072017	**Client:**	Internal Lab
Sample Date:	20 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:		**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Dissolved Oxygen-mg/L

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	8	6.729	9.271	7.9	8.1	0.1	0.1414	1.77%	0
0.215		2	7.8	5.259	10.34	7.6	8	0.2	0.2828	3.63%	0
0.433		2	43.25	-411	497.5	7.5	79	35.75	50.56	116.9%	0
0.785		2	7.6	3.788	11.41	7.3	7.9	0.3	0.4243	5.58%	0
1.551		2	7.75	3.303	12.2	7.4	8 1	0.35	0.495	6.39%	0
4.109		2	7.6	2.518	12 68	7.2	8	0.4	0.5657	7.44%	0
Overall		12	13.67	0.5926	26 74	7.2	79	5.94	20.58	150.60%	0 (0%)

pH-Units

Conc-mg/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
0.215		2	7 9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.433		2	7.9	7.884	7 916	7.9	7.9	0	0	0.0%	0
0 785		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
1.551		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
4.109		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-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
0.215		2	20	20	20	20	20	0	0	0.0%	0
0.433		2	20	20	20	20	20	0	0	0.0%	0
0.785		2	20	20	20	20	20	0	0	0.0%	0
1.551		2	20	20	20	20	20	0	0	0.0%	0
4.109		2	20	20	20	20	20	0	0	0.0%	0
Overall		12	20	20	20	20	20	0	0	0.00%	0 (0%)

Temperature-°C

Conc-mg/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
0.215		2	14 75	14 11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
0.433		2	14.75	14.11	15.39	14.7	14.8	0.05002	0 07075	0.48%	0
0.785		2	14.75	14.11	15.39	14.7	14.8	0.05002	0 07075	0.48%	0
1.551		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
4.109		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%)

Reference Toxicant 96-h Acute Survival Test — Aquatic Bioassay & Consulting Labs, Inc.

Dissolved Oxygen-mg/L

Conc-mg/L	Code	1	2
0	N	8.1	7.9
0.215		8	7.6
0.433		79	7.5
0.785		7 9	7.3
1.551		8.1	7.4
4.109		8	7.2

pH-Units

Conc-mg/L	Code	1	2
0	N	7.9	7.9
0.215		7.9	7.9
0.433		7.9	7.9
0 785		7.9	7.9
1 551		7.9	7.9
4.109		7.9	7.9

Salinity-ppt

Conc-mg/L	Code	1	2
0	N	20	20
0.215		20	20
0.433		20	20
0.785		20	20
1.551		20	20
4.109		20	20

Temperature-°C

Conc-mg/L	Code	1	2
0	N	14.8	14.7
0.215		14.8	14.7
0.433		14.8	14.7
0.785		14.8	14.7
1.551		14.8	14.7
4.109		14.8	14.7

CETIS QC Plot

Report Date: 16 Aug-17 14:52 (1 of 1)

Reference Toxicant 96-h Acute Survival Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Test Type: Survival — **Organism:** Eohaustorius estuarius (Amphipod) — **Material:** Ammonia (Unionized)
Protocol: EPA/600/R-94/025 (1994) — **Endpoint:** Survival Rate — **Source:** Reference Toxicant-REF

Mean: 1.323 — **Count:** 20 — **-2s Action Limit:** 0.8659
Sigma: n/a — **CV:** 23.60% — **+2s Action Limit:** 2.022

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2014	Mar	3	15:00	1.131	-0.1923	-0.7406			09-4566-0644	02-5347-5723
2			29	12:05	1.107	-0.216	-0.8408			12-6769-6316	19-3437-9784
3		May	26	12:00	1.038	-0.285	-1.144			18-3389-0225	21-0956-2019
4		Jun	27	15:10	1.272	-0.05159	-0.1876			14-4723-2072	13-8013-1186
5		Aug	4	14:30	1.429	0.1064	0.3647			05-5751-2262	04-4319-1587
6		Dec	19	14:20	1.45	0.1266	0.4311			15-5240-9390	02-6462-0171
7	2015	Jan	23	13:15	1.11	-0.2133	-0.8292			08-5097-8055	21-3310-7104
8		Mar	2	12:00	1.401	0.07825	0.271			15-0539-9864	01-6817-9780
9		Apr	3	13:00	1.407	0.08373	0.2894			08-1167-0633	12-3933-9277
10		Jul	3	9:59	1.33	0.007037	0.02502			11-3802-2759	04-6629-3041
11		Aug	4	12:01	2.042	0.7193	2.048		(+)	00-8259-5742	03-1846-1391
12		Sep	18	0:00	1.384	0.06065	0.2114			09-1456-1591	15-5936-2326
13	2016	Apr	8	8:20	1.903	0.5804	1.716			19-5616-1906	00-4116-5566
14		Jun	17	0:00	0.855	-0.4681	-2.06		(-)	06-7252-3890	10-1091-7700
15		Aug	16	17:06	1.511	0.1879	0.6263			12-7085-3464	08-3302-7432
16			19	14:40	1.559	0.2359	0.7738			10-2042-5258	19-8914-6087
17			26	15:01	1.09	-0.2335	-0.9159			12-0805-1911	03-7828-2656
18		Nov	21	12:00	1.585	0.2623	0.853			12-2687-2350	04-0042-5960
19	2017	Apr	4	0:00	1.383	0.0602	0.2099			12-3817-1970	03-8517-0024
20			14	12:16	1.048	-0.2755	-1.101			14-7376-2339	20-3852-9867
21		Jul	20	13:20	1.232	-0.0913	-0.3372			09-4458-1879	08-9273-5091

aquatic bioassay & consulting laboratories, inc

CHRONIC MYTILUS DEVELOPMENT BIOASSAY

DATE: 7/11/2017

STANDARD TOXICANT: Unionized Ammonia

NOEC = 0.0510 mg/l

EC25 = 0.0829 mg/l
EC50 = 0.1003 mg/l

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date:	16 Aug-17 14:33 (p 1 of 1)
Test Code:	MYT071117 | 00-5179-3407

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	12-0732-4961	**Test Type:**	Development-Survival	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:05	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:05	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	18-3462-5704	**Code:**	MYT071117	**Client:**	Internal Lab
Sample Date:	11 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:	11 Jul-17	**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
16-9498-4168	Combined Proportion Norma	Dunnett Multiple Comparison Test	0.051	0.076	0.06226		4.07%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	mg/L	95% LCL	95% UCL	TU ✓
01-9616-3304	Combined Proportion Norma	Linear Interpolation (ICPIN)	EC5	0.05887	0.0555	0.06401	
			EC10	0.06775	0.06177	0.07809	
			EC15	0.07624	0.06807	0.07996	
			EC20	0.07961	0.07561	0.08278	
			EC25	0.08298	0.07968	0.08563	
			EC40	0.0931	0 09064	0.09546	
			EC50	0.1003	0.09667	0.1043	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
16-9498-4168	Combined Proportion Norma	PMSD	0.04071	<<	0.25	No	Passes Criteria

Combined Proportion Normal Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.9729	0.9617	0.9841	0.9626	0.9860	0.0040	0.0090	0.92%	0.00%
0.029		5	0.9804	0.9654	0.9954	0.9626	0.9953	0.0054	0.0121	1.23%	-0.77%
0.051		5	0.9710	0.9572	0.9849	0.9579	0.9860	0.0050	0.0112	1.15%	0.19%
0.076		5	0.8336	0.7660	0.9013	0.7523	0.8925	0.0244	0.0545	6.53%	14.31%
0.098		5	0.5150	0.4720	0.5579	0.4813	0.5561	0.0155	0.0346	6.71%	47.07%
0.12		5	0.2589	0.1319	0.3859	0.1215	0.3598	0.0458	0.1023	39.52%	73.39%

Combined Proportion Normal Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9673	0.9766	0.9626	0.9720
0.029		0.9766	0.9860	0.9813	0.9953	0.9626
0.051		0.9720	0.9579	0 9766	0.9860	0.9626
0.076		0.7523	0.8271	0.8925	0.8738	0.8224
0.098		0.5561	0.4860	0.5047	0.5467	0.4813
0.12		0 3598	0.1215	0.2991	0.3318	0.1822

Combined Proportion Normal Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	207/214	209/214	206/214	208/214
0.029		209/214	211/214	210/214	213/214	206/214
0.051		208/214	205/214	209/214	211/214	206/214
0.076		161/214	177/214	191/214	187/214	176/214
0.098		119/214	104/214	108/214	117/214	103/214
0.12		77/214	26/214	64/214	71/214	39/214

CETIS Analytical Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-9498-4168	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:36	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	12-0732-4961	**Test Type:**	Development-Survival	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:05	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:05	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	18-3462-5704	**Code:**	MYT071117	**Client:**	Internal Lab
Sample Date:	11 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:	11 Jul-17	**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	0.051	0.076	0.06226		4.07%

Dunnett Multiple Comparison Test

Control vs	Conc-mg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control	0.029	-0.6976	2.362	0.098	8	CDF	0.9628	Non-Significant Effect
	0.051	0.1191	2.362	0.098	8	CDF	0.7957	Non-Significant Effect
	0.076*	6.105	2.362	0.098	8	CDF	7.0E-06	Significant Effect
	0.098*	14.65	2.362	0.098	8	CDF	7.6E-07	Significant Effect
	0.12*	21.26	2.362	0.098	8	CDF	7.6E-07	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
PMSD	0.04071	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.58992	0.717985	5	167.2	<1.0E-37	Significant Effect
Error	0.103044	0.0042935	24			
Total	3.69297		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	12.34	15.09	0.0304	Equal Variances
Variances	Levene Equality of Variance Test	5.47	3.895	0.0017	Unequal Variances
Variances	Mod Levene Equality of Variance Test	2.676	4.248	0.0560	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4027	3.878	0.3620	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.463	2.576	0.1435	Normal Distribution
Distribution	D'Agostino Skewness Test	1.425	2.576	0.1540	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	4.172	9.21	0.1242	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1272	0.1853	0.2400	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9656	0.9031	0.4264	Normal Distribution

Combined Proportion Normal Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9729	0.9617	0.9841	0.9720	0.9626	0.9860	0.0040	0.92%	0.00%
0.029		5	0.9804	0.9654	0.9954	0.9813	0.9626	0.9953	0.0054	1.23%	-0.77%
0.051		5	0.9710	0.9572	0.9849	0.9720	0.9579	0.9860	0.0050	1.15%	0.19%
0.076		5	0.8336	0.7660	0.9013	0.8271	0.7523	0.8925	0.0244	6.53%	14.31%
0.098		5	0.5150	0.4720	0.5579	0.5047	0.4813	0.5561	0.0155	6.71%	47.07%
0.12		5	0.2589	0.1319	0.3859	0.2991	0.1215	0.3598	0.0458	39.52%	73.39%

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	16-9498-4168	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:36	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Angular (Corrected) Transformed Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.407	1.371	1.444	1.403	1.376	1.452	0.0131	2.08%	0.00%
0.029		5	1.436	1.379	1.494	1.434	1.376	1.502	0.02073	3.23%	-2.05%
0.051		5	1.402	1.359	1.446	1.403	1.364	1.452	0.01555	2.48%	0.35%
0.076		5	1.154	1.064	1.244	1.142	1.05	1.237	0.03244	6.28%	17.98%
0.098		5	0.8004	0.7574	0.8434	0.7901	0.7667	0.8416	0.01548	4.32%	43.13%
0.12		5	0.5266	0.3741	0.6791	0.5786	0.356	0.6433	0.05493	23.33%	62.59%

Combined Proportion Normal Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9673	0.9766	0.9626	0.9720
0.029		0.9766	0.9860	0.9813	0.9953	0.9626
0.051		0.9720	0.9579	0.9766	0.9860	0.9626
0.076		0.7523	0.8271	0.8925	0.8738	0.8224
0.098		0.5561	0.4860	0.5047	0.5467	0.4813
0.12		0.3598	0.1215	0.2991	0.3318	0.1822

Angular (Corrected) Transformed Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.452	1.389	1.417	1.376	1.403
0.029		1.417	1.452	1.434	1.502	1.376
0.051		1.403	1.364	1.417	1.452	1.376
0.076		1.05	1.142	1.237	1.208	1.136
0.098		0.8416	0.7714	0.7901	0.8322	0.7667
0.12		0.6433	0.356	0.5786	0.6138	0.4411

Combined Proportion Normal Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	207/214	209/214	206/214	208/214
0.029		209/214	211/214	210/214	213/214	206/214
0.051		208/214	205/214	209/214	211/214	206/214
0.076		161/214	177/214	191/214	187/214	176/214
0.098		119/214	104/214	108/214	117/214	103/214
0.12		77/214	26/214	64/214	71/214	39/214

Graphics

CETIS Analytical Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-9616-3304	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:36	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	12-0732-4961	**Test Type:**	Development-Survival	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:05	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:05	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	18-3462-5704	**Code:**	MYT071117	**Client:**	Internal Lab
Sample Date:	11 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:	11 Jul-17	**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	mg/L	95% LCL	95% UCL
EC5	0.05887	0.0555	0.06401
EC10	0.06775	0.06177	0.07809
EC15	0.07624	0.06807	0.07996
EC20	0.07961	0.07561	0.08278
EC25	0.08298	0.07968	0.08563
EC40	0 0931	0.09064	0.09546
EC50	0.1003	0.09667	0.1043

Combined Proportion Normal Summary — **Calculated Variate(A/B)**

Conc-mg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	5	0.9729	0.9626	0.9860	0.0040	0.0090	0.92%	0.0%	1041	1070
0.029		5	0.9804	0.9626	0.9953	0.0054	0.0121	1.23%	-0.77%	1049	1070
0.051		5	0.9710	0.9579	0.9860	0.0050	0.0112	1.15%	0.19%	1039	1070
0.076		5	0.8336	0.7523	0.8925	0.0244	0.0545	6.53%	14.31%	892	1070
0.098		5	0.5150	0.4813	0 5561	0.0155	0.0346	6.71%	47.07%	551	1070
0.12		5	0.2589	0.1215	0.3598	0.0456	0.1023	39.52%	73.39%	277	1070

Combined Proportion Normal Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	0.9860	0.9673	0.9766	0.9626	0.9720
0.029		0.9766	0.9860	0.9813	0.9953	0.9626
0.051		0.9720	0 9579	0.9766	0.9860	0.9626
0.076		0.7523	0.8271	0 8925	0.8738	0.8224
0.098		0.5561	0.4860	0.5047	0.5467	0.4813
0.12		0.3598	0.1215	0.2991	0.3318	0.1822

Combined Proportion Normal Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	211/214	207/214	209/214	206/214	208/214
0.029		209/214	211/214	210/214	213/214	206/214
0.051		208/214	205/214	209/214	211/214	206/214
0 076		161/214	177/214	191/214	187/214	176/214
0.098		119/214	104/214	108/214	117/214	103/214
0.12		77/214	26/214	64/214	71/214	39/214

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID:	01-9616-3304	**Endpoint:**	Combined Proportion Normal	**CETIS Version:**	CETISv1.9.2
Analyzed:	16 Aug-17 12:36	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics

CETIS Measurement Report

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID:	12-0732-4961	**Test Type:**	Development-Survival	**Analyst:**	Joe Freas
Start Date:	11 Jul-17 13:05	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	13 Jul-17 13:05	**Species:**	Mytilis galloprovincialis	**Brine:**	Not Applicable
Duration:	48h	**Source:**	Carlsbad Aquafarms CA	**Age:**	

Sample ID:	18-3462-5704	**Code:**	MYT071117	**Client:**	Internal Lab
Sample Date:	11 Jul-17	**Material:**	Ammonia (Unionized)	**Project:**	REF TOX
Receipt Date:	11 Jul-17	**Source:**	Reference Toxicant		
Sample Age:	13h	**Station:**	REF TOX		

Dissolved Oxygen-mg/L

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
0.029		2	6.45	2.003	10.9	6.1	6.8	0.35	0.495	7.67%	0
0.051		2	6.3	2.488	10.11	6	6.6	0.3	0.4243	6.73%	0
0.076		2	6.3	1.218	11.38	5.9	6.7	0.4	0.5657	8.98%	0
0.098		2	6.3	2.488	10.11	6	6.6	0.3	0.4243	6.73%	0
0.12		2	6.35	1.903	10.8	6	6.7	0.35	0.495	7.8%	0
Overall		12	6.367	6.138	6.595	5.9	6.8	0.104	0.3601	5.66%	0 (0%)

pH-Units

Conc-mg/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
0.029		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.051		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.076		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.098		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.12		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-mg/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
0.029		2	34	34	34	34	34	0	0	0.0%	0
0.051		2	34	34	34	34	34	0	0	0.0%	0
0.076		2	34	34	34	34	34	0	0	0.0%	0
0.098		2	34	34	34	34	34	0	0	0.0%	0
0.12		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-mg/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
0.029		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
0.051		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
0.076		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
0.098		2	14.75	14.11	15.39	14.7	14.8	0.05002	0.07075	0.48%	0
0.12		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%)

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Dissolved Oxygen-mg/L

Conc-mg/L	Code	1	2
0	N	6.8	6.2
0.029		6.8	6.1
0.051		6.6	6
0.076		6.7	5.9
0.098		6.6	6
0.12		6.7	6

pH-Units

Conc-mg/L	Code	1	2
0	N	7.9	7.9
0.029		7.9	7.9
0.051		7.9	7.9
0.076		7.9	7.9
0.098		7.9	7.9
0.12		7.9	7.9

Salinity-ppt

Conc-mg/L	Code	1	2
0	N	34	34
0.029		34	34
0.051		34	34
0.076		34	34
0.098		34	34
0.12		34	34

Temperature-°C

Conc-mg/L	Code	1	2
0	N	14.7	14.8
0.029		14.7	14.8
0.051		14.7	14.8
0.076		14.7	14.8
0.098		14.7	14.8
0.12		14.7	14.8

CETIS QC Plot

Report Date: 16 Aug-17 14:51 (1 of 1)

Mussel Shell Development Test — **Aquatic Bioassay & Consulting Labs, Inc.**

Test Type:	Development-Survival	**Organism:**	Mytilis galloprovincialis (Bay Mussel)	**Material:**	Ammonia (Unionized)
Protocol:	EPA/600/R-95/136 (1995)	**Endpoint:**	Combined Proportion Normal	**Source:**	Reference Toxicant-REF

Mean:	0.09956	**Count:**	20	**-3s Action Limit:**	0.05865
Sigma:	n/a	**CV:**	19.30%	**+3s Action Limit:**	0.169

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2015	Mar	2	12:00	0.1122	0.01262	0.6767			13-3957-4687	06-7935-4536
2			13	13:11	0.1056	0.006028	0.3332			10-1325-2256	11-2995-0388
3			25	12:07	0.1122	0.01262	0.6767			07-2930-8292	02-2197-8026
4			27	13:00	0.1099	0.01034	0.5604			11-3853-2256	13-5054-4782
5		Apr	7	11:45	0.1026	0.003088	0.1732			12-2502-7105	10-2162-0221
6			8	11:09	0.1097	0.01013	0.5494			00-3845-6517	14-9860-8731
7		May	5	15:50	0.07308	-0.02648	-1.753			06-5240-5858	05-1777-9314
8	2016	Jun	20	0:03	0.09473	-0.004825	-0.2816			09-1849-9021	02-0742-5358
9		Aug	29	13:15	0.08589	-0.01367	-0.837			16-9120-9803	14-7955-7716
10			30	13:31	0.08804	-0.01152	-0.697			02-4232-7593	19-6882-0866
11			31	12:01	0.09348	-0.006083	-0.3574			02-8216-1505	04-6017-0013
12		Sep	1	13:52	0.09473	-0.004833	-0.2821			18-3025-2961	13-8859-5437
13	2017	Feb	2	14:30	0.1176	0.01799	0.9417			01-6286-1304	11-0921-4960
14			3	15:00	0.1266	0.02702	1.361			17-1265-1098	11-2623-5578
15			28	15:00	0.152	0.0524	2.397			13-0755-9035	10-0162-3171
16		Apr	3	11:00	0.09808	-0.001477	-0.08472			10-9925-1083	01-6782-6637
17			7	13:00	0.08576	-0.0138	-0.8461			11-3555-4503	16-4525-5272
18			11	14:00	0.08467	-0.01489	-0.9183			07-9913-1261	10-7842-2030
19			17	13:00	0.07438	-0.02518	-1.653			09-5831-9942	07-6939-4415
20			18	14:01	0.09953	-3.4E-05	-0.001935			02-1224-1290	04-5643-3951
21		Jul	11	13:05	0.1003	0.0007288	0.04135			00-5179-3407	01-9616-3304

Analyst: N QA: Cas

10 Day Eohaustorius Sediment Toxicity Test

Test Date 7/20/17 Client Anchor QEA

Test Organism E. estuarius

Analyst	7.21	7.22	7.23	7.24	7.25	7.26	7.27	7.28	7.29	7.30
Date:										
Sample	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day7	Day 8	Day 9	Day 10
Home	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Home	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Home	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Home	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Home	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Test Start Date: 7/20/17

Test End Date: 7/30/17

Reference Toxicant: WH3

Sample Source: Anchor QEA

Experiment #: ANC0717.

Amphipod Species: E. estuarius

Collection/Arrival Date: 7/12 - 7/14

Amphipod Source: N.W. Aquatic Sciences

Laboratory: CA ABC

Test Cont. #	Station Code	Total Number Alive	Number at Start	Percent Survival	Notes (Possible Predators)
Home 1		20	20		
2		20	20		
3		19	20		
4		20	20		
5		20	20		
WS1-1		20	20		
2		19	20		
3		20	20		
4		20	20		
5		20	20		
WS 2-1		20	20		
2		20	20		
3		18	20		
4		20	20		
5		20	20		
WS3-1		19	20		
2		20	20		
3		20	20		
4		20	20		
5		19	20		
WS 4-1		19	20		
2		20	20		
3		19	20		
4		20	20		
5		20	20		

AMPHIPOD CHEMICAL ANALYSIS SHEET

Project: Anchor QEA
Date: 7/20/17

Experiment: 10d sed tox
Species: E. estuarius

Test Container	pH		D.O. mg/L		Salinity ppt.		Temp. °C		Ammonia mg/L
	Day 0	Day 10	Day 0	Day 10	Day 0	Day 10	Day 0	Day 10	Day 0
HOME	7.9	7.9	10.1	10.0	20	20	14.7	14.9	0
WS 1	7.8	7.7	10.0	10.1	20	20	14.7	14.9	0
WS 2	8.3	7.9	10.1	10.2	20	20	14.7	14.9	0
WS 3	8.1	7.7	10.1	10.1	20	20	14.7	14.9	0
WS4	8.0	7.8	10.3	10.1	20	20	14.7	14.9	0

Initial: [illegible]

AMPHIPOD BIOASSAY STANDARD REFERENCE TOXICANT TEST

COMPANY: Aquatic Bioassay
START: 7/20/17 1320

I.D.: Ammonium Chloride
END: 7/24/17 1320

CHEMICAL ANALYSIS

CONC.	7/20/17 INITAL				Meas	7/24/17 96 HRS.				Conc. 2ed
	D.O.	TEMP	pH	SAL	Ammonia	D.O.	TEMP	pH	SAL	Ammonia
CON	8.1	14.8	7.9	20	0	7.1	14.7	7.9	20	0
15.6 mg/L	8.0	14.8	7.9	20	12.3	7.6	14.7	7.9	20	0.215
31.2 mg/L	7.9	14.8	7.9	20	24.6	7.5	14.7	7.9	20	0.433
62.5 mg/L	7.9	14.8	7.9	20	44.8	7.3	14.7	7.9	20	0.785
125 mg/L	8.1	14.8	7.9	20	89.1	7.4	14.7	7.9	20	1.551
250 mg/L	8.0	14.8	7.9	20	186.6	7.2	14.7	7.9	20	4.109

BIOLOGICAL MEASUREMENTS

CONC. (mg/L)	0 HRS.	96 HRS.	MEAN SURVIVAL
CONTROL	10	10	
CONTROL	10	10	
CONTROL	10	10	
CONTROL	10	10	
15.6	10	10	
15.6	10	10	
15.6	10	10	
15.6	10	10	
31.2	10	8	
31.2	10	9	
31.2	10	10	
31.2	10	9	
62.5	10	8	
62.5	10	6	
62.5	10	7	
62.5	10	6	
125	10	4	
125	10	3	
125	10	4	
125	10	4	
250	10	2	
250	10	1	
250	10	0	
250	10	1	

DATE: 7/24/17

QA/QC CHECKLIST FOR SEDIMENT TOXICITY
Eohaustorius estuarius 10 Day Survival

Project: Anchor QEA
QA Batch: NH3 7/20
Test Date: 7/20/17
Reviewed By: [illegible]

Sample Storage	Yes	No (Explain/Sample #)
4°C in Dark	X	
≤ 14 Days	X	

Test Conditions	Yes	No (Explain/Sample #)
5 Replicates per Station	X	
20 Amphipods per Replicate	X	
Water Quality Measurement at Start & End	X	
Daily Checks of Beakers	X	
Organism Acclimation >96hrs & <2 Weeks	X	
Organism Mortality During Acclimation (Must be below 15%)	# 11	

Test Acceptability	Yes	No (Explain/Sample #)
Control Mean Survival ≥90%	X	
Control Survival Each Replicate ≥80%	X	
Reference Toxicant Test within Limits	X	
Temperature 14-16°C	X	
Salinity 17-23ppt.	X	
Unionized Ammonia <0.8mg/L	X	
Dissolved Oxygen >5.0mg/L	X	

Data Validation	Yes	No (Explain/Sample #)
Test Data Entry	X	
Water Quality Data Entry	X	
Statistical Verification	X	
Reference Toxicant Data Entry	X	

Toxicity Test Data Sheet

DATE Initial	DATE Final	CLIENT	CONC (mg/L)	TEMP (Deg. C)		pH		D.O.		Salinity		Ammonia TAN	Ammonia NH_3
7/11/17	7/13/17	STD TOX	CON	14.7	14.8	7.9	7.9	6.8	6.2	34	34	0	0
		Mytilus	2.0	14.7	14.8	7.9	7.9	6.8	6.1	34	34	1.59	0.029
			4.0	14.7	14.8	7.9	7.9	6.6	6.0	34	34	2.69	0.051
			6.0	14.7	14.8	7.9	7.9	6.7	5.9	34	34	4.28	0.076
			8.0	14.7	14.8	7.9	7.9	6.6	6.0	34	34	5.56	0.098
			10	14.7	14.8	7.9	7.9	6.7	6.0	34	34	6.79	0.120
7/11/17	7/13/17	CON	100	14.7	14.8	7.9	7.9	6.8	6.2	34	34	0	0
7/11/17	7/13/17	WS 1 .016	100	14.7	14.8	8.3	8.0	6.6	6.1	34	34	0	0
7/11/17	7/13/17	WS 2 .017	100	14.7	14.8	8.0	7.7	6.1	6.0	34	34	0	0
7/11/17	7/13/17	WS 3 .018	100	14.7	14.8	8.1	8.0	6.8	6.1	34	34	0	0
7/11/17	7/13/17	WS 4 .019	100	14.7	14.8	8.2	8.0	6.9	6.6	34	34	0	0

MYTILUS TEST DATA SHEET

Test Start Date: 7/11/17 1300
Test End Date: 7/13/17 1300
Microscope: 1
Mytilus Source: Venice Ohio
Analyst: [illegible]

Company: STD TOX
Sample Rec'd: 7/11
Lab No.: NA
Sample I.D.: MYT071117
Dilutiou Water: Con 34ppt

NOEC: _____

Test Cont. No.	NOMINAL CONCENTRATION	INITIAL DENSITY $\bar{x}$=214	NUMBER NORMAL/ALIVE	PROPORTION NORMAL/ALIVE
1	CON	214	211	
2	CON		207	
3	CON		209	
4	CON		206	
5	CON		208	
6	2.0		204	
7	2.0		211	
8	2.0		210	
9	2.0		213	
10	2.0		206	
11	4.0		208	
12	4.0		205	
13	4.0		209	
14	4.0		211	
15	4.0		206	
16	6.0		161	
17	6.0		177	
18	6.0		191	
19	6.0		187	
20	6.0		176	
21	8.0		119	
22	8.0		104	
23	8.0		108	
24	8.0		117	
25	8.0		103	
26	10.0		77	
27	10.0		26	
28	10.0		64	
29	10.0		71	
30	10.0		39	

1. 216
2. 219
3. 211
4. 208
5. 216

1070
÷5
214 = $\bar{x}$

MYTILUS TEST DATA SHEET

Test Start Date: 7/11/17 1301
Test End Date: 7/13/17 1301
Microscope: 1
Mytilus Source: Vashon Island
Analyst: J

Company: ANC1-4
Sample Rec'd: 7/7
Lab No.: NA
Sample I.D.: ANC0717.016/017/018/019
Dilution Water: Con 34 ppt

NOEC: _____

Test Cont. No.	NOMINAL CONCENTRATION	INITIAL DENSITY	NUMBER NORMAL/ALIVE	PROPORTION NORMAL/ALIVE
1	CON	214	211	
2	CON		206	
3	CON		208	
4	CON		205	
5	CON		209	
6	WS1 100		213	
7			210	
8			206	
9			208	
10			211	
11	WS2 100		205	
12			209	
13			206	
14			208	
15			211	
16	WS3 100		207	
17			202	
18			209	
19			206	
20			211	
21	WS4 100		208	
22			206	
23			209	
24			211	
25			209	
26				
27				
28				
29				
30				

.016
.017
.018
.019

Attachment E
Benthic Community Analysis Laboratory Report

aquatic bioassay & consulting laboratories, inc

November 7th, 2017

Chris Osuch
Anchor QEA
27201 Puerta Real, Suite 350
Mission Viejo, CA 92619

Dear Mr. Osuch:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed data report for benthic infauna analysis.

Please contact me with any questions or issues you may have regarding this report.

Yours very truly,

Karin Wisenbaker
Environmental Programs
(805) 643-5621 ex.17

Project ID: Colorado Lagoon - 2017
Client: Anchor QEA
Analysis: Benthic Infauna Identification and SQO Metrics
Delivered: November 6, 2017

aquatic bioassay & consulting laboratories, inc

Benthic Infauna Results

Phylum	Species	WS1-BE-170706	WS2-BE-170706	WS3-BE-170706	WS4-BE-170706
Annelida	Oligochaeta	1		230	8
	Armandia brevis	3	23	8	48
	Capitella capitata Cmplx	18	11	40	7
	Chaetozone corona		1		
	Cirratulidae			3	
	Cirriformia sp	21		112	
	Diplocirrus sp SD1			1	
	Dorvillea (Schistomeringos) longicornis	60	3	6	145
	Eteone sp 11				2
	Euchone limnicola	99	4		3
	Euclymeninae				1
	Exogone lourei				121
	Exogone sp				13
	Halosydna johnsoni				1
	Harmothoe imbricata Cmplx				6
	Kirkegaardia cryptica				1
	Leitoscoloplos pugettensis	1	48	49	27
	Marphysa sp	1	1	1	
	Marphysa sp B				1
	Mediomastus sp	13		7	23
	Mediomastus sp 6				3
	Megalomma pigmentum	1	1		
	Megasyllis nipponica		1	17	79
	Neanthes acuminata cmplx	5		13	32
	Nereididae			2	
	Notomastus tenuis				1
	Odontosyllis phosphorea				7
	Piromis capulata				3
	Pista brevibranchiata	3	82	14	85
	Platynereis bicanaliculata			3	
	Polydora cornuta	1			
	Prionospio heterobranchia	4	3	5	5
	Prionospio lighti				1
	Pseudopolydora paucibranchiata	2	89	55	34
	Scoletoma erecta		3		22
	Scoletoma sp	2			16
	Scoletoma sp C				3
	Scoloplos acmeceps				1
	Streblospio benedicti	24		2	

Project ID: Colorado Lagoon - 2017
Client: Anchor QEA
Analysis: Benthic Infauna Identification and SQO Metrics
Delivered: November 6, 2017

aquatic bioassay & consulting laboratories, inc

Benthic Infauna Results (Continued)

Phylum	Species	WS1-BE-170706	WS2-BE-170706	WS3-BE-170706	WS4-BE-170706
Arthropoda	Califanthura squamosissima			1	
	Caprella simia				11
	Eochelidium sp A	5	1		
	Grandidierella japonica	1			4
	Leptochelia dubia Cmplx			11	
	Mayerella acanthopoda	2	14	59	
	Monocorophium acherusicum	5			
	Paradexamine sp SD1				18
	Paranthura elegans				22
	Paranthuridae				6
	Podocerus sp		1		
	Pontogeneia sp		1		
	Rudilemboides stenopropodus				1
	Zeuxo kurilensis				13
	Zeuxo normani			1	
Cnidaria	Anemonactis sp A			1	
Echinodermata	Leptosynapta sp	10	11	5	
	Amphipholis squamata			2	3
	Ophiactis simplex				1
Mollusca	Laevicardium substriatum	1			1
	Leukoma laciniata			1	
	Lyonsia californica	3	2		
	Macoma nasuta	1			
	Musculista senhousia	147	29	92	276
	Tagelus affinis			1	
	Theora lubrica	96			
	Venerupis philippinarum	2	1		4
	Acteocina carinata	9	17	79	3
	Barleeia haliotiphila			1	4
	Caecum californicum				5
	Crepidula onyx				5
	Crepipatella lingulata				3
Nematoda	Nematoda			1	
Nemertea	Lineidae	1			
	Maculaura alaskensis Cmplx				2
	Palaeonemertea	1			
	Tubulanidae				1
Phorona	Phoronis sp	35	22	6	
Platyhelminthes	Stylochus exiguus		1		

Project ID: Colorado Lagoon - 2017
Client: Anchor QEA
Analysis: Benthic Infauna Identification and SQO Metrics
Delivered: November 6, 2017

aquatic bioassay & consulting laboratories, inc

Sediment Quality Objective Infauna Metrics

Infauna Metrics Score				
Station	**BRI**	**IBI**	**RBI**	**RIVPACS**
WS1-BE-170706	58.49	1	0.10	1.02
WS2-BE-170706	54.53	1	0.08	0.57
WS3-BE-170706	59.34	1	0.06	0.86
WS4-BE-170706	52.44	1	0.12	1.04

Project ID: Colorado Lagoon - 2017
Client: Anchor QEA
Analysis: Benthic Infauna Identification and SQO Metrics
Delivered: November 6, 2017

aquatic bioassay & consulting laboratories, inc

Sediment Quality Objective Infauna Categories

Infauna Metrics Category					
Station	**BRI**	**IBI**	**RBI**	**RIVPACS**	**Integrated Score**
WS1-BE-170706	3	2	3	1	3
WS2-BE-170706	3	2	4	3	3
WS3-BE-170706	3	2	4	2	3
WS4-BE-170706	3	2	3	1	3

Chain of Custody

eurofins | Calscience

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY

DATE: ~~03/24/17~~ 7/6/17

PAGE: 1 OF 1

LABORATORY CLIENT: Anchor QEA

ADDRESS: 27201 Puerta Real, Suite 350

CITY: Mission Viejo STATE: CA ZIP: 92691

TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Colorado Lagoon TMDL / 160548-07.02

P.O. NO.: 160548-07.01

PROJECT CONTACT: Chris Osuch

SAMPLER(S): (PRINT) C. Osuch, C. Dolphin

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

~~Report down to the MDL~~ (CP)

~~Increase MS/MSD concentrations for zinc and copper~~

~~Analyze CRMs with Metals, TOC, PCBs, PAHs and pesticides~~

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	Benthic community analysis
ARC 039	WS1-BE-170706	7/6/17	1310	SED	2		X		X
040	WS2-BE-170706	↓	1725	SED	4		X		X
041	WS3-BE-170706		1524	SED	1		X		X
042	WS4-BE-170706	✓	0915	SED	2		X		X

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
[signature]	Chris Osuch	7/6/17	1300
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision

Quality Assurance/Quality Control

Taxonomic QC Report on Station WS3

Submitted by: Lawrence L. Lovell (lllpolytax@gmail.com)
Senior Projects Coordinator, Dancing Coyote Environmental
Prepared by: Byron Analytics LLC

Date: 2 November, 2017

OVERVIEW

Dancing Coyote Environmental (DCE) performed the following tasks following Southern California Bight (SCB) Regional Monitoring protocols: primary taxonomic identification of all stations; re-identification of the selected QC station; comparison of original and QC datasets; resolution of non-matching species identifications and/or counts; presentation of a final resolved dataset; calculation of the four SCB Regional Monitoring QC efficiency equations; and QC report preparation. Primary and QC taxonomy work on each phyletic group was performed by different DCE taxonomists. Review of Not-match taxa, coding, and resolution of final data was performed during a third review of each sample by the primary taxonomist, followed by discussion of results with the QC taxonomist. In addition to this report, additional supporting documentation is presented in an Excel file containing spreadsheets by station with details of the resolution process and the calculation spreadsheet including a summary table of the resulting resolutions and final calculations. Listings of the Discrepancy Classification and Resolution Codes are provided below (Tables 1 and 2, respectively).

METHODS

The results of the Taxonomic QC performed on the above referenced sample is presented in the appropriate spreadsheets. The columns of each spreadsheet are organized as follows: Columns A–F contain the original taxonomic data (Station / Phyla / Species ID / Abundance / Voucher / Comments) and Columns G–I contain the QC taxonomic data (QC Abundance / Voucher / Comments). All of the species identified by the original and/or QC taxonomist are listed in Column C. Abundance values in Columns D (original) and G (QC) are compared to generate the Match/Not-Match results found in Columns J-K. Columns L–S contain the resolution information used to track the errors and resolutions: Discrepancy type, Lines Involved in Resolution, Discrepancy Class, Resolution Code, Taxa Changed (add/remove), Abundance Changes (+/-), Taxa Changed (note with X), # individuals Mis-ID'd (counts change). Columns S–U contain the final resolved data (Resolved Species, Resolved Abundance, and Resolution Comments).

The QC resolution process is applied to the lines of data listed as "Not-Match" for either the name or count. The lines involved in the resolution identify which species were involved in the resolution of Not-Match data. Discrepancy classifications codes (Table 1) are used to categorize each Not-Match result.

Table 1. Discrepancy classifications codes

Discrepancy Classifications	Description
E	Error (identification or count)
J	Judgmental difference (difference in level of expertise)
N	Nomenclatural difference (naming convention usage)
L	Apparent specimen loss (sample handling)
P	Processing error (data entry, animal from another vial)

Resolution codes (Table 2) are defined as described.

Table 2. Taxonomic resolution codes

Code	Resolution Description	Error type	Action
1	Primary taxonomist misidentification	True	TRC, Training
2	QC taxonomist misidentification	True	Training
3	Primary taxonomist miscount	True	TRC, Review best practices
4	QC taxonomist miscount	True	Review best practices
5	Primary taxonomist data entry error	Random	TRC, Review best practices
6	QC taxonomist data entry error	Random	Review best practices
7	Primary naming convention discrepancy	True	TRC, Review best practices
8	QC naming convention discrepancy	True	Review best practices
9	Primary variation in level of expertise	Non-Error	Training
10	QC variation in level of expertise	Non-Error	Training
11	organism added from another vial	Random	Review best practices
12	specimen lost	Random	Review best practices
13	specimen vouchered	Non-Error	Data tracking
14	specimen damaged during primary ID, not identifiable by QC taxonomist	Non-Error	No Action

Taxonomic efficiency calculation equations follow SCB Regional Monitoring QC protocols. Four criteria are assessed: Taxa Richness Accuracy, Abundance Accuracy, Taxonomic Accuracy, and Accuracy Identified Taxa. The efficiency calculations use data from the total number of taxa and total abundance values from the original/final data sets and number individuals and taxa mis-identified (Mis-ID) at each station. The taxonomic efficiency target for all assessment criteria is ≥90.0% accuracy (or ≤10.0% error rate). The % Taxa Richness Accuracy (previously termed # of Taxa Discriminated) calculates overall speciation accuracy. The % Abundance Accuracy (previously termed Count Accuracy) addresses the count accuracy. The % Taxonomic Accuracy (previously termed Identification Accuracy) calculates the percentage error caused by all misidentifications at a station. The % Accuracy Identified Taxa calculates the percentage of accurately identified taxa. Efficiency error rates are presented in the Efficiency Calculations Table worksheet of the accompanying Excel file. Errors attributed to the QC taxonomist are not included in the calculations as the QC process is intended to assess the primary taxonomists' data. Taxonomic efficiencies at low diversity and/or low abundance stations are more readily impacted by identification and count errors, and low efficiencies at such stations can be misleading.

RESULTS

A single station, WS3, was selected for taxonomic quality control (QC) assessment. DCE taxonomists met or exceeded the taxonomic QC efficiency targets for all metrics (Table 3), except Abundance Accuracy, which scored 83.9%. This score was primarily due to data entry errors (Table 2, code 5) for three taxa, which totaled 126 individuals. If these data entry errors had not been made, the Abundance Accuracy efficiency score would have passed at 99.0%. The DCE taxonomist involved will view best practices for data entry.

The final resolved data set for the station WS3 will be submitted by Karin Wisenbaker. Should you have any questions regarding the information contained in this report, the accompanying spreadsheets, or the formatting changes, please contact me.

Table 3. Taxonomic QC Efficiency Calculations

Station	Taxa Richness Accuracy	Abundance Accuracy	Taxonomic Accuracy	Accuracy Identified Taxa
WS3	96.8%	83.9%	96.8%	99.0%

Attachment F
Data Validation Reports

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Data Validation Report – EPA Stage 2A

August 18, 2017

Project: Colorado Lagoon Total Maximum Daily Load Monitoring

Project Number: 160548-07.02

This report summarizes the review of analytical results for four surface water samples collected on July 13, 2017. The samples were collected by Anchor QEA, LLC, and submitted to Eurofins Calscience, Inc. (ECI), in Garden Grove, California. The samples were analyzed for the following parameters:

- Total Kjeldahl nitrogen (TKN) by United States Environmental Protection Agency (USEPA) method 351.2
- Total phosphorus (TP) by USEPA method 365.1
- Orthophosphate (OP) by USEPA method 365.1 (modified)
- Total suspended solids (TSS) by Standard Method (SM) 2540D
- Total ammonia (NH3) as nitrogen by USEPA 350.1
- Total nitrate as nitrogen by SM 4500-NO3 E/SM 4500-NO2 B
- Total and dissolved metals by USEPA method 1640
- Chlorinated pesticides, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCB) congeners by USEPA method 8270C-SIM

Some of the methods used by the laboratory differed from those suggested in the *Colorado Lagoon Total Maximum Daily Load Monitoring Plan* (CLTMP; Kinnetic 2011); however, all methods used are USEPA-approved and, therefore, deemed comparable and acceptable for use for these analyses. ECI sample data group 17-07-0701 was reviewed in this report. Sample IDs and analyses are presented in Table 1.

Table 1
Sample IDs, Matrices, and Analyses

Sample ID	Lab ID	Matrix	Analysis
WS1-SW-170713	17-07-0701-1	Water	Total and dissolved metals, NH3, TKN, TP, OP, TSS, nitrate, pesticides, PAHs, PCBs
WS2-SW-170713	17-07-0701-2	Water	Total and dissolved metals, NH3, TKN, TP, OP, TSS, nitrate, pesticides, PAHs, PCBs
WS3-SW-170713	17-07-0701-3	Water	Total and dissolved metals, NH3, TKN, TP, OP, TSS, nitrate, pesticides, PAHs, PCBs
WS4-SW-170713	17-07-0701-4	Water	Total and dissolved metals, NH3, TKN, TP, OP, TSS, nitrate, pesticides, PAHs, PCBs

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QC) guidelines outlined in the analytical procedures and data quality objective sections of the CLTMP. Laboratory results were reviewed using the laboratory control limits and the following guidelines:

- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846, Third Edition; USEPA 1986)
- *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2017a)
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017b)

No project-required accuracy control limits were listed in the CLTMP for nutrients and TSS analyses. Accuracy results for these results were evaluated following laboratory criteria. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by ECI at the time of sample receipt; the samples were received within the recommended temperature range and in good condition.

Holding Times and Sample Preservation and Analytical Methods

Samples were appropriately preserved and analyzed within holding times.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes, except zinc, which was detected in the method blank associated with dissolved samples. Associated sample results were significantly (greater than five times) higher than the blank result, so no data were qualified.

Quality Control

No field QC samples were required in association with this sample set.

Surrogate Recoveries

All surrogate recoveries were within the laboratory control limits.

Laboratory Control Samples and Laboratory Control Sample Duplicates

Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) were analyzed at the required frequencies. Some PAHs, pesticides, and PCBs were not spiked in the LCS or LCSD;

therefore, instrument accuracy could not be evaluated for these analytes. All LCS/LCSD recoveries and/or relative percent difference (RPD) values were within project-required control limits.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequency. Some PAHs, pesticides, and PCBs were not spiked in the MS or MSD; therefore, accuracy could not be evaluated for these analytes. MSs and MSDs resulted in recoveries and/or RPD values within project-required control limits, with the following exceptions:

- Nutrients: Ammonia and orthophosphate recovered above the laboratory control limit in the MS and MSD analyzed on sample WS2-SW170713. Detected results were qualified "J" to indicate a potentially high bias. TKN recovered below the laboratory control limit in the MSD analyzed on sample WS1-SW-170713. Results were qualified "J" to indicate a potentially low bias.
- Metals: Total zinc recovered above the control limit in the MS and MSD analyzed on sample WS2-SW170713. Results were qualified "J" to indicate a potentially high bias.
- Pesticides: 4,4'-DDT recovered below the control limit in the MS and MSD analyzed on sample WS2-SW170713. The parent sample result was qualified "UJ" to indicate a potentially low bias.

Laboratory Duplicates

One laboratory duplicate was analyzed for TSS. The duplicate RPD was within laboratory control limits.

Method Reporting Limits

Method reporting limits were acceptable as reported and met the CLTMP's suggested detection limits. Values were reported as undiluted or when diluted, the reporting limit reflects the dilution factor.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD recovery values, with the exceptions noted above. Precision was acceptable as demonstrated by the laboratory duplicate, LCS/LCSD, and MS/MSD RPD values. Most data are acceptable as reported. Table 2 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definitions

U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit

J Indicates an estimated value

UJ Indicates the compound or analyte was analyzed for but not detected and the specified limit reported is estimated

Table 2
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
WS1-SW-170713	Nutrients	NH3	0.027J mg/L	0.027J mg/L	MS/MSD %R above control limit
		TKN	0.35 mg/L	0.35J mg/L	MSD %R below control limit
	Total metals	Zinc	3.18 µg/L	3.18J µg/L	MS/MSD %R above control limit
WS2-SW-170713	Nutrients	NH3	0.023J mg/L	0.023J mg/L	MS/MSD %R above control limit
		OP	0.022J mg/L	0.022J mg/	
		TKN	0.34 mg/L	0.34J mg/L	MSD %R below control limit
	Total metals	Zinc	3.19 µg/L	3.19J µg/L	MS/MSD %R above control limit
	Pesticides	4,4'-DDT	0.00084U µg/L	0.00084UJ µg/L	MS/MSD %R below control limit
WS3-SW-170713	Nutrients	NH3	0.026J mg/L	0.026J mg/L	MS/MSD %R above control limit
		TKN	0.32 mg/L	0.32J mg/L	MSD %R below control limit
	Total metals	Zinc	3.68 µg/L	3.68J µg/L	MS/MSD %R above control limit
WS4-SW-170713	Nutrients	NH3	0.025J mg/L	0.025J mg/L	MS/MSD %R above control limit
		TKN	0.29 mg/L	0.29J mg/L	MSD %R below control limit
	Total Metals	Zinc	4.44 µg/L	4.44J µg/L	MS/MSD %R above control limit

Notes:
%R: percent recovery
µg/L: microgram per liter
mg/L: milligram per liter
MS/MSD: matrix spike/matrix spike duplicate
NH3: ammonia
OP: organophosphate
TKN: total Kjeldahl nitrogen

References

Kinnetic (Kinnetic Laboratories, Inc., and Moffatt & Nichol), 2011. *Colorado Lagoon TMDL Monitoring Plan*. Order No. R8-2011-0050. Prepared for the City of Long Beach. Issued October 28, 2011.

USEPA (U.S. Environmental Protection Agency), 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA, 2017a. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-002. January 2017.

USEPA, 2017b. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-001. January 2017.

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ANCHOR QEA

Data Validation Report – EPA Stage 2A

August 7, 2017

Project: Colorado Lagoon Total Maximum Daily Load Monitoring

Project Number: 160548-07.02

This report summarizes the review of analytical results for four sediment samples collected on July 6, 2017. The samples were collected by Anchor QEA, LLC, and submitted to Eurofins Calscience, Inc. (ECI) in Garden Grove, California. The samples were analyzed for the following parameters:

- Total solids (TS) by Standard Method (SM) 2540B
- Total organic carbon (TOC) by United States Environmental Protection Agency (USEPA) method 9060A
- Particle size (PS) by ASTM method D4464
- Total metals by USEPA method 6020
- Total mercury (Hg) by USEPA method 7471A
- Chlorinated pesticides, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyl (PCB) congeners by USEPA method 8270C-SIM

ECI sample data group (SDG) 17-07-0331 was reviewed in this report. Sample IDs and analyses are presented in Table 1.

Table 1
Sample IDs, Matrices, and Analyses

Sample ID	Lab ID	Matrix	Analysis
WS1-SS-170706	17-07-0331-1	Sediment	TS, TOC, PS, metals, Hg, pesticides, PAHs, PCBs
WS2-SS-170706	17-07-0331-2	Sediment	TS, TOC, PS, metals, Hg, pesticides, PAHs, PCBs
WS3-SS-170706	17-07-0331-3	Sediment	TS, TOC, PS, metals, Hg, pesticides, PAHs, PCBs
WS4-SS-170706	17-07-0331-4	Sediment	TS, TOC, PS, metals, Hg, pesticides, PAHs, PCBs

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QC) guidelines outlined in the analytical procedures and data quality objective sections of the *Colorado Lagoon Total Maximum Daily Load Monitoring Plan* (CLTMP; Kinnetic 2011) guidance document. Laboratory results were reviewed using the laboratory control limits and the following guidelines:

- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846, Third Edition; USEPA 1986)

- *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2017a)
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017b)

No project-required accuracy control limits were listed in the CLTMP for conventional analyses. Accuracy results for these results were evaluated following laboratory criteria. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by ECI at the time of sample receipt; the samples were received within the recommended temperature range and in good condition.

Holding Times and Sample Preservation and Analytical Methods

Samples were appropriately preserved and analyzed within holding times.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes.

Quality Control

No field QC samples were required in association with this sample set.

Surrogate Recoveries

All surrogate recoveries were within the laboratory control limits, except PCB surrogate recovery p-Terphenyl-d14 for sample WS3-SS-170706. Associated sample results were non-detect, so no data were qualified.

Laboratory Control Samples and Laboratory Control Sample Duplicates

Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) were analyzed at the required frequencies. Some PAHs, pesticides, and PCBs were not spiked in the LCS or LCSD, so instrument accuracy could not be evaluated for these analytes. All LCS/LCSD recoveries and/or relative percent difference (RPD) values were within project-required control limits.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequency. Some PAHs, pesticides, and PCBs were not spiked in the MS or MSD, so accuracy could not be evaluated for these analytes. MS and MSDs resulted in recoveries and/or RPD values within project-required control limits, with the following exceptions:

- Metals: Zinc recovered below the laboratory control limit in the MSD analyzed on sample WS1-SS-170706. Results were qualified "J" to indicate a potentially low bias.
- Pesticides: One analyte recovered below the control limit in the MS, and four analytes recovered below the control limit in the MSD analyzed on WS1-SS-170706. Associated parent sample results were qualified "J" or "UJ" to indicate an estimated value. All MS/MSD RPDs analyzed on sample WS1-SS-170706 were above the control limit, except the RPD for 4,4'-DDT. All detected parent sample results were qualified "J" to indicate an estimated value.
- PAHs: Six analytes recovered above the control limit in the MS, and three analytes recovered above the control limit in the MSD analyzed on sample WS1-SS-170706. Eight MS/MSD RPD values were above the control limit. All detected parent sample results were qualified "J" to indicate an estimated value.

Laboratory Duplicates

One laboratory duplicate was analyzed for TS. The duplicate RPD was within laboratory control limits.

Method Reporting Limits

Method reporting limits were acceptable as reported and met the CLTMP's suggested detection limits. Values were reported as undiluted or when diluted, the reporting limit reflects the dilution factor.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD recovery values, with the exceptions noted above. Precision was acceptable as demonstrated by the laboratory duplicate, LCS/LCSD, and MS/MSD RPD values or difference values. Most data are acceptable as reported. Table 2 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definitions

U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit

J Indicates an estimated value

UJ Indicates the compound or analyte was analyzed for but not detected and the specified limit reported is estimated

Table 2
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
WS1-SS-170706	Metals	Zinc	179 mg/kg	179J mg/kg	MSD %R below control limit
	Pesticides	4,4'-DDD	0.1U µg/kg	0.1UJ µg/kg	
		Dieldrin	0.27U µg/kg	0.27UJ µg/kg	
		4,4'-DDT	0.13U µg/kg	0.13UJ µg/kg	MS/MSD %R below control limit
		Chlordane, alpha-	2.3 µg/kg	2.3J µg/kg	MSD %R below control limit/RPD above control limit
		Chlordane, beta-	2.6 µg/kg	2.6J µg/kg	
	PAHS	Benzo(a)pyrene	16J µg/kg	16J µg/kg	MS %R and RPD above control limit
		Benzo(b)fluoranthene	32 µg/kg	32J µg/kg	
		Benzo(k)fluoranthene	18J µg/kg	18J µg/kg	
		Chrysene	43 µg/kg	43J µg/kg	
		Phenanthrene	24J µg/kg	24J µg/kg	MSD %R and RPD above control limit
		Fluoranthene	58 µg/kg	58J µg/kg	MS/MSD %R and RPD above control limit
		Pyrene	65 µg/kg	65J µg/kg	
		Indeno(1,2,3-c,d)pyrene	16J µg/kg	16J µg/kg	MS/MSD RPD above control limit
WS2-SS-170706	Metals	Zinc	102 mg/kg	102J mg/kg	MSD %R below control limit
WS3-SS-170706	Metals	Zinc	109 mg/kg	109J mg/kg	MSD %R below control limit
WS4-SS-170706	Metals	Zinc	385 mg/kg	385J mg/kg	MSD %R below control limit

Notes:
Beta-Chlordane is listed as gamma chlordane in the laboratory report.
%R: percent recovery
µg/kg: microgram per kilogram
mg/kg: milligram per kilogram
MS/MSD: matrix spike/matrix spike duplicate
PAH: polycyclic aromatic hydrocarbon
RPD: relative percent difference

References

Kinnetic (Kinnetic Laboratories, Inc., and Moffatt & Nichol), 2011. *Colorado Lagoon TMDL Monitoring Plan*. Order No. R8-2011-0050. Prepared for the City of Long Beach. Issued October 28, 2011.

USEPA (U.S. Environmental Protection Agency), 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA, 2017a. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-002. January 2017.

USEPA, 2017b. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-001. January 2017.

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Data Validation Report – EPA Stage 2A

August 8, 2017

Project: Colorado Lagoon Total Maximum Daily Load Monitoring

Project Number: 160548-07.02

This report summarizes the review of analytical results for two tissue samples collected on July 11, 2017. The samples were collected by Anchor QEA and submitted to Eurofins Calscience, Inc. (ECI), in Garden Grove, California. The samples were analyzed for the following parameters:

- Lipids by National Oceanic and Atmospheric Administration method 1993
- Chlorinated pesticides, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyl (PCB) congeners by U.S. Environmental Protection Agency (USEPA) method 8270C-SIM

ECI sample data group 17-07-0490 was reviewed in this report. Sample IDs and analyses are presented in Table 1.

Table 1
Sample IDs, Matrices, and Analyses

Sample ID	Lab Sample ID	Matrix	Analyses
F1-170711	17-07-0490-1	Tissue	Lipids, PCBs, PAHS, pesticides
F2-170711	17-07-0490-2	Tissue	Lipids, PCBs, PAHS, pesticides

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QC) guidelines outlined in the analytical procedures and data quality objective sections of the of the *Colorado Lagoon Total Maximum Daily Load Monitoring Plan* (CLTMP; Kinnetic 2011) guidance document. Laboratory results were reviewed using the laboratory control limits and the following guidelines:

- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846, Third Edition; USEPA 1986)
- *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2017a)
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017b)

No project-required accuracy control limits were listed in the CLTMP for the lipids analysis. Accuracy for these results were evaluated following laboratory criteria. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by ECI at the time of sample receipt; the samples were received within the recommended temperature range and in good condition.

Holding Times and Sample Preservation and Analytical Methods

Samples were appropriately preserved and analyzed within holding times.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes.

Field Quality Control

No field QC samples were required in association with this sample set.

Surrogate Recoveries

All surrogate recoveries were within the laboratory control limits.

Laboratory Control Samples and Laboratory Control Sample Duplicates

Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) were analyzed at the required frequencies. Some PAHs, pesticides, and PCBs were not spiked in the LCS or LCSD, so instrument accuracy could not be evaluated for these analytes. All LCS/LCSD recoveries and/or relative percent difference (RPD) values were within project-required control limits.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequency. Some PAHs, pesticides, and PCBs were not spiked in the MS or MSD, so accuracy could not be evaluated for these analytes. MS and MSDs resulted in recoveries and/or RPD values within project-required control limits, with the following exceptions:

- Pesticides: 4,4′-DDT recovered below the control limit in the MS and MSD analyzed on sample F2-170711. The associated parent sample result was qualified “UJ” to indicate an estimated value. Dieldrin did not recover in the MS or MSD analyzed on sample F2-170711. The associated parent sample result has been qualified “R” to indicate the result has been rejected.

Laboratory Duplicates

One laboratory duplicate was analyzed for lipids. The duplicate RPD was within laboratory control limits.

Method Reporting Limits

Method reporting limits were acceptable as reported and met the CLTMP's suggested detection limits. Values were reported as undiluted or when diluted, the reporting limit reflects the dilution factor.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD recovery values, with the exceptions noted above. Precision was acceptable as demonstrated by the laboratory duplicate, LCS/LCSD, and MS/MSD RPD values or difference values. Most data are acceptable as reported. Table 2 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definitions

U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit.

UJ Indicates the compound or analyte was analyzed for but not detected and the specified limit reported is estimated

R Indicates the result value is rejected

Table 2
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
F2-170711	Pesticides	4,4'-DDT	0.053U µg/kg	0.053UJ µg/kg	MS/MSD %R below control limit
		Dieldrin	0.11U µg/kg	R	MS/MSD %R did not recover

Notes:
%R: percent recovery
µg/kg: microgram per kilogram
MS/MSD: matrix spike/matrix spike duplicate

References

Kinnetic (Kinnetic Laboratories, Inc. and Moffatt & Nichol), 2011. *Colorado Lagoon TMDL Monitoring Plan*. Order No. R8-2011-0050. Prepared for the City of Long Beach. Issued October 28, 2011.

USEPA (U.S. Environmental Protection Agency), 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA, 2017a. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-002. January 2017.

USEPA, 2017b. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-001. January 2017.