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Information Technology Unit Los Angeles Regional Water Quality Control Board 320 West 4th Street, Suite 200 Los Angeles, California 90013

Subject:

Fourth Quarter 2018 NPDES Discharge Monitoring Report

Compliance File CI-6027 and NPDES No. CA0001309

Santa Susana Field Laboratory Ventura County, California

The Boeing Company (Boeing) hereby submits this Discharge Monitoring Report (DMR) for the Santa Susana Field Laboratory (Santa Susana Site) for the period of October 1 through December 31, 2018 (Fourth Quarter 2018). This DMR was prepared as required by, and in accordance with the National Pollutant Discharge Elimination System Permit No. CA0001309 (NPDES Permit) issued by the Los Angeles California Regional Water Quality Control Board (Regional Board) in 2015. The NPDES Permit covers the entire Santa Susana Site, including the approximately 2,400 acres owned by Boeing, the approximately 450 acres owned by the United States and administered by the National Aeronautics and Space Administration (NASA), and the approximately 290 acres for which the Department of Energy (DOE) has assumed responsibility for soil remediation.

In addition to reporting the sampling results of outfalls that flowed in connection with rain events that occurred in the Fourth Quarter 2018, this DMR discusses the steps taken in the aftermath of the November 2018 Woolsey Wildfire, which caused a substantial loss of vegetation at the Santa Susana Site and the destruction of many previously installed controls identified as best management practices (BMPs). BMPs include, as examples, fiber rolls, sand bags, rip rap, hydromulch, biofilters, bioswales, stormwater conveyance pipelines, and outfall monitoring equipment. Before the fire, naturally occurring vegetation, vegetation established by hydroseed, and BMPs aided in controlling sediment and constituent migration into and within stormwater. While steps were taken as soon as feasible following the fire to control sediment and constituent runoff and redeploy BMPs, the damaged BMPs and vegetation loss in the fire had some impact on controlling sediment flow in the Fourth Quarter 2018, resulting in increased amounts of sediment (e.g., dirt) being captured in stormwater, which is referred to as "turbidity". A fuller discussion of these post-fire restoration efforts is set forth below under the heading "FOURTH QUARTER 2018 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES".

Hard copies of this DMR are available to the public at California State University at Northridge Library, Simi Valley Public Library, and the Platt Branch of the Los Angeles Public Library. An electronic version of this DMR is located at:

http://www.boeing.com/principles/environment/santa-susana/monitoring-reports.page



FOURTH QUARTER 2018 DMR CONTENTS

This DMR includes the following sections and appendices:

- Discharge and Sample Collection Summary: This section describes the number of rain events, number of samples collected, sample dates, and sample locations during the Fourth Quarter 2018. Table I summarizes the Fourth Quarter 2018 sampling record by outfall, location, and sample type collected per the requirements of the NPDES Permit.
- Fourth Quarter 2018 Receiving Water Surveys: This section summarizes the receiving water surveys required by the NPDES Permit. Table II presents the Fourth Quarter 2018 Arroyo Simi observations. Table III presents the Fourth Quarter 2018 Bell Creek observations. Table IV presents the Fourth Quarter 2018 Dayton Canyon Creek observations.
- Fourth Quarter 2018 Summary of Exceedances and/or Non-Compliance: This section summarizes the sample results that exceeded NPDES Permit limits, daily maximum benchmark limits, and receiving water limits in the Fourth Quarter 2018, and the potential causes thereof.
- Fourth Quarter 2018 Santa Susana Site Stormwater Pollution Prevention Plan (SWPPP)/BMP Activities: This section presents the Santa Susana Site SWPPP and BMP-related activities associated with Woolsey Wildfire Vegetation Restoration as well as activities associated with NASA, DOE, the Stormwater Expert Panel (Expert Panel), the Northern Drainage, and the Outfall 001/002 BMP Compliance Report implemented in the Fourth Quarter 2018. Table V summarizes typical BMP-related activities that occur at outfalls every quarter. Table VI summarizes specific BMP activities by outfall location that were completed during the Fourth Quarter 2018.
- Reasonable Potential Analysis: This section discusses the results of the analysis.
- Data Validation and Quality Control: This section discusses data validation results and any laboratory or field corrective actions.
- Figure 1 shows the stormwater collection conveyance system, the Bell Creek Receiving Water sampling location (RSW-001, Outfall 002), and Santa Susana Site features; Figure 2 shows the Arroyo Simi Receiving Water (RSW-002, Frontier Park) sampling location and upstream monitoring location.
- Appendix A summarizes the rainfall measured during the Fourth Quarter 2018 at the Santa Susana Site.
- Appendix B tabulates waste shipment details.
- Appendix C presents chemical analytical results from the Fourth Quarter 2018 stormwater and/or receiving water and sediment sample discharge monitoring in tabular form by outfall location, constituents evaluated (analytes), sample dates, and data validation qualifiers.
- Appendix D summarizes the NPDES Permit limit exceedances.
- Appendix E contains copies of the laboratory analytical reports, chain of custody forms, and data validation reports.
- Appendix F tabulates the Reasonable Potential Analysis.



DISCHARGE AND SAMPLE COLLECTION SUMMARY

The Santa Susana Site measured four qualifying rain events during the Fourth Quarter 2018 that produced greater than 0.1 inch of rainfall within a 24-hour period and were preceded by at least 72 hours of dry weather (Appendix A). Automated flow-weighted composite samplers (autosamplers) were set in preparation for all rain events. One of the four qualifying rain events produced stormwater discharges. During this event, stormwater samples were collected at Outfalls 002, 008, and 009. There were no changes in the discharge as described in the NPDES Permit during the reporting period.

One quarterly offsite receiving water sample was collected at the Arroyo Simi location (RSW-002, Frontier Park; see Figure 2) and one onsite receiving water sample was collected at Outfall 002 (RSW-001). Table I summarizes the Fourth Quarter 2018 sampling record by location, sample frequency, and sample type collected per NPDES Permit requirements.

TABLE I: Sampling Record during the Fourth Quarter 2018

Date	Outfall/Location	Sample Frequency	Sample Type
12/06 - 12/07/2018	Outfall 002	Quarterly, Routine; Quarterly (RSW-001)	Grab, Composite
12/06 - 12/07/2018	Outfall 008	Annual, Routine	Grab, Composite
12/06 - 12/07/2018	Outfall 009	Semiannual, Routine	Grab, Composite
12/6/2018	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Quarterly Surface Water	Grab

Notes:

Routine = 1/discharge.

All analyses were conducted at analytical laboratories certified for such analyses by the State Water Resources Control Board ([SWRCB]; i.e., all have current certification from the Environmental Laboratory Accreditation Program [ELAP] established by the California Environmental Laboratory Improvement Act) or are approved by the SWRCB Executive Officer and in accordance with current U.S. Environmental Protection Agency (EPA) guideline procedures or as specified in the NPDES Permit.

FOURTH QUARTER 2018 RECEIVING WATER SURVEYS

The receiving water monitoring program required by the NPDES Permit includes Bell Creek, Dayton Canyon Creek and Arroyo Simi surveys. Observations are made only during discharge on a monthly basis from Outfalls 002, 008, and 009. During Fourth Quarter 2018, Outfalls 002, 008, and 009 discharged in December. Table II, Table III, and Table IV below present the observations.

TABLE II: Fourth Quarter 2018 Arroyo Simi Observations

Arroyo Simi Observations	October 2018	November 2018	December 2018
Date and time of inspection	NA	NA	12/6/2018, 12:25
Weather conditions	NA	NA	Cloudy, windy, no precipitation, 48°F
Color of water	NA	NA	Brown



Arroyo Simi Observations	October 2018	November 2018	December 2018
Appearance of oil films or grease, or floatable materials	NA	NA	None
Extent of visible turbidity or color patches	NA	NA	Uniform, opaque
Description of odor, if any	NA	NA	None
Presence or activity of California Least Tern or California Brown Pelican	NA	NA	No
Upstream Surface Water Temperature*	NA	NA	9.36°C
Upstream Surface Water pH*	NA	NA	7.58 pH Units

Notes:

NA = not applicable. Since Outfall 009 did not flow during the months of October and November, no monthly inspection was required at Arroyo Simi.

TABLE III: Fourth Quarter 2018 Bell Creek Observations

Bell Creek Observations	October 2018	November 2018	December 2018
Date and time of inspection	NA	NA	12/6/2018, 9:40
Weather conditions	NA	NA	Partly cloudy, between rain, breezy
Color of water	NA	NA	Brown, opaque, uniform
Appearance of oil films or grease, or floatable materials	NA	NA	Few leaves, no films or grease
Extent of visible turbidity or color patches	NA	NA	Uniform, opaque
Description of odor, if any	NA	NA	None
Presence or activity of California Least Tern or California Brown Pelican	NA	NA	No

Notes:

NA = not applicable. Since Outfall 002 did not flow during the months of October and November, no monthly inspection was required at Outfall 002.

TABLE IV: Fourth Quarter 2018 Dayton Canyon Creek Observations

Dayton Canyon Creek Observations	October 2018	November 2018	December 2018
Date and time of inspection	NA	NA	12/6/2018, 9:10
Weather conditions	NA	NA	Raining moderately hard, breezy
Color of water	NA	NA	Very dark gray
Appearance of oil films or grease, or floatable materials	NA	NA	Wood bits, twigs, no films or grease

^{* =} These data were collected to assist in determining compliance with receiving water limitations. Upstream data were compared to the pH and temperature measured at Arroyo Simi sample location RSW-002 (Appendix C) and were within 0.5 unit and 5°F of the upstream field readings; therefore, compliance was demonstrated.



Dayton Canyon Creek Observations	October 2018	November 2018	December 2018
Extent of visible turbidity or color patches	NA	NA	Uniform, opaque
Description of odor, if any	NA	NA	None
Presence or activity of California Least Tern or California Brown Pelican	NA	NA	No

Notes:

NA = not applicable. Since Outfall 008 did not flow during the months of October and November, no monthly inspection was required at Outfall 008.

FOURTH QUARTER 2018 SUMMARY OF EXEEDANCES AND/OR NON-COMPLIANCE

As summarized in Appendix D, the Fourth Quarter 2018 exceedances of Daily Maximum Benchmark Limits, Daily Maximum Permit Limits, or receiving water limits included:

- Copper, iron, lead, selenium, and zinc at Outfall 002;
- Cyanide, copper, and lead at Outfall 008; and
- Dioxins (TCDD) toxic equivalent (TEQ) at Outfall 009.

Boeing is committed to fulfilling the requirements of the NPDES Permit. Boeing and NASA each took actions during the Fourth Quarter 2018 to control erosion and sediment transport and minimize the occurrence of future permit exceedances on each party's property and/or area of responsibility. Boeing's actions are described in Tables V and VI, and sections on BMP Plan-Related Activities, Woolsey Wildfire Restoration Activities, and Outfall 001/002 BMP Compliance Report Related Activities. Any repair and other erosion control measures to BMPs taken by NASA and DOE are also described below. Boeing will continue to work with the Expert Panel to address exceedances at Outfalls.

Outfall 002

Metals: Copper, Iron, Lead, Selenium, and Zinc

On December 7, 2018, a stormwater sample was collected from Outfall 002. Iron was detected at 98 milligrams per liter (mg/L), above its the Daily Maximum Benchmark Limit of 0.3 mg/L; copper was detected at 52 micrograms per liter (μ g/L), above its Daily Maximum Benchmark Limit of 14 μ g/L; lead was detected at 88 μ g/L, above its Daily Maximum Benchmark Limit of 5.2 μ g/L; selenium was detected at 11 μ g/L, above its wet weather Daily Maximum Benchmark Limit of 8.2 μ g/L; and zinc was detected at 430 μ g/L, above its Daily Maximum Benchmark Limit of 119 μ g/L.

These exceedances were preceded by the Woolsey Fire which burned vegetation, deposited ash, and destabilized soils. It is well known that wildfires result in increased runoff flowrates and sediment yield due to the soil repelling water in areas impacted by the fire and decreased vegetative coverage and erosion control, respectively. Another common result of wildfire is an increase in suspended solids comprised of sediment and ash which was confirmed by visual observations of the Bell Creek receiving water (Table III). Lastly, there are no industrial materials, equipment, activity or development-associated sources in this watershed. Most buildings and pavement have been removed, leaving only dirt roads.

¹ Gross alpha results are in a separate section below.



The Expert Panel study, "SSFL Metals Background Report: Sources of Metals in SSFL Watersheds" (Pitt, 2009) noted that heavy metals in stormwater discharges from Outfalls 001, 002, 008, and 009 originate from various sources, including natural soil components, rainfall, and dry atmospheric deposition from local and regional sources. Natural soil components include "very fine soils" that preferentially erode and "have generally been found to have higher metal concentrations compared to larger [soil] particles." This report also compared wet weather metals concentrations in creeks in regional natural watersheds to concentrations observed at the Santa Susana Site and concluded that "outfall metal concentrations were comparable to the concentrations at these undeveloped watersheds."

Based on these environmental circumstances, Boeing believes that contact with native soil and sediments and ash contributed to the increased metals concentrations observed in stormwater runoff in the Outfall 002 watershed.

The Stormwater Expert Panel is currently evaluating the data contained in this report and will include the results of their analysis on the likely causes of these exceedances in the 2019 Annual Report.

Exceeding these Daily Maximum Benchmark Limits triggers a BMP Compliance Report, which Boeing will submit to the Regional Board. The actions completed during Fourth Quarter 2018 to control erosion and sediment transport and minimize the occurrence of future permit exceedances in Outfall 002 are described in the Outfall 001/002 BMP Compliance Report Related Activities and in the Woolsey Wildfire Restoration Activities section below. Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 002 watershed.

Outfall 008

Metals: Copper and Lead

On December 7, 2018, a stormwater sample was collected from Outfall 008. Copper was detected at 15 μ g/L, above its Daily Maximum Benchmark Limit of 14 μ g/L; and lead was detected at 54 μ g/L, above its Daily Maximum Benchmark Limit of 5.2 μ g/L.

These exceedances were preceded by the Woolsey Wildfire which burned vegetation, deposited ash, and destabilized soils. It is well known that wildfires result in increased runoff flowrates and sediment yield due to the soil repelling water in areas impacted by the fire and decreased vegetative coverage and erosion control, respectively. Another common result of wildfire is an increase in suspended solids comprised of sediment and ash which was confirmed by visual observation of the Dayton Canyon receiving water (Table IV). Lastly, there are no industrial materials, equipment, activity or development-associated sources in this watershed. All buildings and pavement have been removed, leaving only dirt roads.

As discussed above, the Expert Panel study, "SSFL Metals Background Report: Sources of Metals in SSFL Watersheds" (Pitt, 2009) noted that heavy metals in stormwater discharges from Outfalls 001, 002, 008, and 009 originate from various sources, including natural soil components, rainfall, and dry atmospheric deposition from local and regional sources. Natural soil components include "very fine soils" that preferentially erode and "have generally been found to have higher metal concentrations compared to larger [soil] particles." This report also compared wet weather metals concentrations in creeks in regional natural watersheds to concentrations observed at the Santa Susana Site and concluded that "outfall metal concentrations were comparable to the concentrations at these undeveloped watersheds."

Based on these environmental circumstances, Boeing believes that contact with native soil and sediments contributed to the increased metals concentrations observed in stormwater runoff in the Outfall 008 watershed.



The Stormwater Expert Panel is currently evaluating the data contained in this report and will include the results of their analysis of the likely causes of these exceedances in the 2019 Annual Report.

The actions completed during Fourth Quarter 2018 to control erosion and sediment transport and minimize the occurrence of future permit exceedances are described in the BMP Activities and Woolsey Wildfire Restoration Activities sections below. Boeing will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 008 watershed.

Cyanide

On December 7, 2018, a stormwater sample was collected from Outfall 008. Cyanide was detected at 15 μ g/L, above its Daily Maximum Benchmark Limit of 9.5 μ g/L. Cyanides can be produced by certain bacteria, fungi, and algae and are found in a number of foods and plants. The potential for species of cyanide to be produced from wildfires has been studied by Los Alamos National Laboratory. These studies also show that cyanides can be produced by the photo-oxidation of fire retardants (Gallaher and Koch, 2004), which were used generally in combating the Woolsey wildfire and even if not directly applied to the Outfall 008 watershed could have been deposited by the wind.

Based on these environmental circumstances, Boeing believes that contact with ash resulting from burned vegetation contributed to the detection of cyanide in stormwater runoff in the Outfall 008 watershed.

The Stormwater Expert Panel is currently evaluating the data contained in this report and will include the results of their analysis on the likely causes of these exceedances in the 2019 Annual Report.

Outfall 009

Dioxins (TCDD) Toxic Equivalent (TEQ)

On December 7, 2018, TCDD TEQ was calculated in a stormwater sample collected from Outfall 009 at $3.7E-08 \mu g/L$, above the Daily Maximum Permit Limit of $2.8E-08 \mu g/L$.

The Department of Toxic Substances Control's (DTSC) Chemical Soil Background Study found TCDD congeners in soil background conditions and concluded that they could have originated from wildfire combustion processes and atmospheric deposition (DTSC, 2012). In addition, the Expert Panel has reported that treated woods (i.e., telephone/utility poles) and pavement runoff may release dioxins that could be be captured in stormwater.

Based on these environmental circumstances, Boeing believes that contact with treated wood and pavement, as well as ash resulting from burned vegetation during the recent and prior fires, contributed to the detection of dioxins in stormwater runoff in the Outfall 009 watershed.

The Stormwater Expert Panel is evaluating the data contained in this report, as well as dioxin sources, and will include the results of their analysis on the likely cause of this exceedance in the 2019 Annual Report.

Gross Alpha for Outfalls 002 and 008

Outfall 002

On December 7, 2018, a stormwater sample was collected from Outfall 002. Gross alpha was reported at 22.3 +/- 5.45 picocuries per liter [pCi/L], above the Daily Maximum Benchmark Limit of 15 pCi/L. Per the NPDES Permit, if gross alpha is greater than 15 pCi/L, four things must occur: uranium analysis must be performed, uranium results must be less than 20 pCi/L, gross alpha minus total uranium must be



compared to the Benchmark Limit of 15 pCi/L, and the average of gross alpha results for the calendar year must also be compared to the Daily Maximum Benchmark Limit of 15 pCi/L. Uranium analysis was performed and the result was 1.25 +/- 1.30. Gross alpha minus total uranium was calculated to be 21.05 +/- 5.60 pCi/L which exceeds the Daily Maximum Benchmark Limit of 15 pCi/L. The only other discharge event for Outfall 002 was on March 23, 2018. Averaging the December and March data gives an annual average of 11.70 +/- 2.95 pCi/L, which is below the Daily Maximum Benchmark Limit.

Like metals, levels of gross alpha often increase due to increased turbidity (e.g., sediment captured in stormwater). For example, naturally occurring Uranium-238 and Thorium-232 and their decay products comprise 12 alpha emitting radionuclides, which, under the theory of secular equilibrium, comprise 16 pCi/g or 16,000 pCi/kg of soil. As such, a relatively small amount of soil in water with these naturally occurring materials could result in elevated gross alpha concentrations that exceed 15 pCi/L.

The turbidity measured at Outfall 002 during the December 7, 2018 sampling event was elevated -- 2,500 nephelometric turbidity units (NTUs). As such, Boeing believes that high turbidity (i.e., high suspended solids) resulting from the Woolsey Wildfire caused an increase in gross alpha levels.

Outfall 008

On December 7, 2018, a stormwater sample was collected from Outfall 008. Gross alpha was reported at 14.8 +/- 3.81 pCi/L, which was slightly above the Benchmark Limit of 15 pCi/L if you take into account the range provided by the lab. As stated above, if gross alpha is greater than 15 pCi/L, four things must occur: uranium analysis must be performed, uranium results must be less than 20 pCi/L, gross alpha minus total uranium must be compared to the Benchmark Limit of 15 pCi/L, and the average of gross alpha results for the calendar year must also be compared to the Benchmark Limit of 15 pCi/L. Uranium analysis was performed and the results were 1.33 +/- 0.884. Gross alpha minus total uranium was calculated to be 13.47 +/- 3.91 pCi/L which is indeterminate compared to the Daily Maximum Benchmark Limit of 15 pCi/L. As Outfall 008 only flowed during the Fourth Quarter 2018, the annual average was also indeterminate.

Outfall 008 turbidity was 890 NTU. Given the high turbidity (high suspended solids) of this sample and consistent with the discussion above, the elevated but indeterminate levels of gross alpha likely were caused by vegetation loss and BMP damage caused by the Woolsey Wildfire.

The Stormwater Expert Panel is evaluating the data contained in this report and will include the results of their analysis in the 2019 Annual Report.

FOURTH QUARTER 2018 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES

Boeing implemented significant activities related to the Site-Wide SWPPP (Haley & Aldrich, 2018) and BMP-related activities to assist in improving stormwater quality and compliance at the Santa Susana Site. Table V summarizes typical BMP-related activities that occur at outfalls every quarter.



TABLE V: Routine Quarterly Outfall BMP Activities

BMP Activities					***************************************	Out	falls					
	001	002	003	004	005	006	007	800	009	010	011	018
Conducted erosion, sediment control, and drainage stabilization inspections and performed maintenance around the perimeter of the outfall, the drainage/ watershed, and areas of disturbance or sparse vegetation.	X	X	X	X	x	X	X	Х	X	X	X	X
Inspected the flume for sediment/debris.	Х	Х	Х	Х	N/A	Х	N/A	Х	Х	Х	N/A	Х
Inspected the weir for sediment/debris.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Х	N/A
Cleaned the sample box of sediment and debris, checked for the presence of animals, and performed weed abatement as needed.	х	X	Х	х	×	Х	X	Х	N/A	x	Х	Х
Checked the flow meter control box for the presence of debris and/or animals.	х	Х	Х	Х	N/A	Х	N/A	Х	Х	х	Х	Х
Cleaned the outfall area of sediment and debris and performed weed abatement as needed.	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х
Reset the flow meter and replaced the tape monthly.	Х	Х	Х	Х	N/A	Х	N/A	Х	Х	Х	Х	Х
Conducted maintenance inspections of the stormwater conveyance system.	N/A	N/A	Х	Х	х	Х	Х	N/A	N/A	х	Х	Х
Conducted maintenance inspections of the stormwater retention system.	N/A	N/A	Х	х	х	Х	Х	N/A	N/A	х	Х	Х
Conducted maintenance inspections of the flow-through structure.	N/A	N/A	Х	Х	N/A	Х	N/A	N/A	N/A	Х	Х	Х

Notes:

X = BMP activity is applicable to the outfall and was completed in Fourth Quarter 2018.

N/A = BMP activity is not applicable to the outfall because the outfall does not have a flume, sample box, flow meter, retention system or flow-through structure or is not part of the stormwater conveyance system.

In addition to SWPPP-related activities, specific BMP projects included: Woolsey Wildfire Vegetation Restoration, NASA SWPPP BMPs, DOE BMPs, Expert Panel reports related to BMPs, Northern Drainage BMPs, and Outfall 001/002 BMPs. These are discussed in more detail below.



OTHER BMP ACTIVITIES

BMP observations and maintenance inspections were conducted in conformance with the Site-Wide SWPPP (Haley & Aldrich, 2018) at and around the former active test stands Alfa and Bravo and former Advanced Propulsion Test Facility.

WOOLSEY WILDFIRE VEGETATION RESTORATION ACTIVITIES

As a result of the Woolsey Wildfire in November 2018, up to 80 percent of the Santa Susana Site property burned, including telephone poles, electrical lines, water conveyance lines, 24-hour composite sampling equipment, and destroyed a substantial amount of vegetation and BMPs. The ground surface of the Santa Susana Site was impacted with ash and/or charred material, which are known to contain naturally occurring constituents such as dioxins and metals (EPA, 2000; Aronsson and Ekelund, 2004). In addition, wildfires have been shown to increase soil pH and to cause an increase in nitrate, ammonia, and other compounds related to plant nutrients (Higgins, et. al., 1989; Earl and Blinn, 2003). To reduce the impact of the ash and charred material on stormwater and to help establish vegetation regrowth, numerous activities were implemented as soon as feasible to help restore the natural, engineered and/or institutional controls that aid in minimizing the erosion of surface materials and sediment migrating in stormwater.

During the Fourth Quarter 2018, Boeing assessed the damage to the BMPs and the Santa Susana Site in general, began repairing/replacing/upgrading the BMPs destroyed, and began installing additional BMPs across the Santa Susana Site to reduce sediment and constituent runoff. Table VI summarizes the additional activities completed during the Fourth Quarter 2018 by outfall or BMP location.

TABLE VI: Additional Fourth Quarter 2018 BMP Activities

OUTFALL OR BMP LOCATION	BMP ACTIVITIES DURING FOURTH QUARTER 2018
001	Installed straw and composite wattles around the drainage. Repaired fire damaged sampling tubing and bubbler tubing. Hydromulched around the drainage channel.
002	Removed fire damaged HDPE lines used as irrigation lines from previous fires. Removed and replaced solar panels and wiring, autosampler tubing and sample drums. Repaired fire damaged electrical lines associated with the solar panels. Installed straw and composite wattles around the drainage channel. Hydromulched around the drainage channel. Installed compost socks at the outfall.
006	Installed small sump pump to prevent leak/flume bypass. Removed and replaced autosampler sample tubing, solar panels and wiring.
008	Replaced fire damaged flow meter tubing and bubbler tubing. Repaired fire damaged electrical cables associated with the solar panel. Removed and installed a battery for the flow meter. Installed composite wattles along the drainage channel and straw wattles on the hillside to stabilize the slope. Hydromulched the watershed. Installed fiber rolls in Happy Valley and upstream of Outfall 008. Installed compost socks at the outfall.



OUTFALL OR BMP LOCATION	OUTFALL OR BMP LOCATION
011	Removed fire damaged autosampler enclosure and batteries, conveyance pump, conveyance line, valving, and totalizer. Vacuumed, via Supervac, fine ash and debris in and around the basin. Installed straw wattles and composite wattles around the basin. Repaired cracks in concrete channel; installed polyester felt over the concrete swale and covered with riprap to prevent weed regrowth. Hydromulched the surrounding areas. Installed cover over media bed to improve operation of flow over the weir and through the media bed prior to composite sampling and to prevent ponding water from settling in the sample box. Added additional gravel diversion berm at southern end of burn pit to divert excess water into Outfall 011 weir / media bed. Placed straw wattles at the top of CTL IV, down slope to Perimeter Pond, and in the vicinity of Outfall 011. Fused replacement suction and discharge HDPE piping from Outfall 011 to Perimeter Pond. Installed new aluminum autosampler lean to, installed new solar panels, new autosamplers, associated electrical wiring, sample drums and sample tubing.
	Removed fire damaged intake pumps and intake and discharge piping at SWTS 011. Replaced fire damaged HDPE discharge line between Perimeter Pond and R1 Pond.
012 and 013	Removed fire damaged HDPE lines and vacuumed, via Supervac, fine ash and debris along the conveyance route. Replaced approximately 2,000 feet conveyance lines to Silvernale. Installed temporary pumps to convey water.
018	Removed debris at the outfall resulting from the fire. Removed fire damaged sampling equipment (shed, drums, autosamplers, tubing, etc.). Removed the fire damaged media bed. Installed new aluminum autosampler lean to, new solar panels, new autosamplers, associated electrical wiring, sample drums and sample tubing. Repaired the fiberglass flume. Rebuilt the stairway to the flume. Installed composite wattles along the slope above the flume. Hydromulched the hill above the flume.
016	Replaced the fire damaged HDPE discharge lines from Silvernale pond down to the discharge point at the Outfall 018 flume. Replaced the fire damaged HDPE lines from R2A pond up to Silvernale pond including the piping and valving for the pressure surge tank and all check valves and pressure relief valves along the pipeline. Replaced and upgraded the fire damaged electrical panel for the R2A pumps. Replaced the fire damaged potable water line to the SWTS and a fire damaged personal protective equipment (PPE) shed.
Roadways; various locations	Began hydromulching effort on December 17 th which will be completed in early 2019. Removed approximately 1,000 feet of fire damaged HDPE stormwater conveyance pipeline between the Old Conservation Yard Area (which receives stormwater from outfalls Outfall 003, Outfall 004 and Outfall 010) and Silvernale Pond. Installed new pipe, new pressure relief valves, check valves and control valves; salvaged and re-used existing steel pipe supports to secure the pipeline.
	Replaced approximately 1,200 feet of HDPE pipe between the 5-7 pad and Silvernale Pond.



NASA-RELATED ACTIVITIES

Demolition activities covered by NASA's Construction SWPPP (dated May 16, 2017) for the Alfa and Bravo areas are inspected in accordance with the Construction General Permit (CGP). During the Fourth Quarter 2018, NASA maintained wattles as linear sediment controls, maintained silt fencing, and maintained hydroseeded areas within these sites where construction activities had been completed.

Demolition and stormwater control activities covered by NASA's Construction SWPPP (dated February 21, 2017) for the Delta Area are inspected in accordance with the CGP. During the Fourth Quarter 2018, BMPs and hydroseed were maintained.

Demolition activities covered by NASA's Construction SWPPP (dated December 4, 2017) are inspected in accordance with the CGP. During the Fourth Quarter 2018, NASA completed demolition activities in the Coca Test Stand Area. NASA maintained wattles as linear sediment controls, sandbags, and hydroseed within active demolition areas.

Demolition and stormwater control activities covered by NASA's Construction SWPPP (dated September 20, 2018) for the LOX and Bravo Areas are inspected in accordance with the CGP. During the Fourth Quarter 2018, NASA began demolition activities in these areas and maintained wattles as linear sediment controls and maintained sandbags and silt fencing. NASA maintained hydroseeded areas within these sites where construction activities had been completed and for temporary soil stabilization.

The Woolsey Wildfire consumed approximately 350 acres of NASA-administered property in Area II at the Santa Susana Field Laboratory (approximately 85%). Following the fire, NASA surveyed the burned areas and replaced BMPs where needed. NASA replaced straw wattles, sandbags, silt fencing, and hydroseed in areas of active SWPPPs that were burned in the Woolsey Wildfire. NASA also installed new BMPs (straw wattles and applied hydroseed) in burned areas to reduce the potential for soil/ash movement and to protect onsite drainages. NASA will continue to monitor burned areas and install BMPs as needed.

DOE-RELATED ACTIVITIES

DOE reported no BMP-related activities during the Fourth Quarter 2018.

EXPERT PANEL-RELATED ACTIVITIES

The BMP activities discussed below were performed, commenced, or completed during the Fourth Quarter 2018 in coordination with the Expert Panel.

B-1 Area

The B-1 Area BMPs consists of:

- A sedimentation basin, constructed in 2012;
- A media filter, constructed in 2012; and
- An upper parking lot media filter, constructed in 2017.

The Fourth Quarter 2018 activities included continued BMP inspections and cleaning the areas free of sediment and debris.



Culvert Modifications

Twelve culvert modifications (CMs) were constructed in 2009 at various locations at or along the main road adjacent to the Northern Drainage. The CMs were designed to treat stormwater road runoff and/or stormwater from the surrounding hillside. The Fourth Quarter 2018 activities included BMP inspections, including the culvert inlets and riprap check dams.

Road Runoff Diversion to CM-3

The construction of a new Service Area road runoff diversion to CM-3 was completed during the Second Quarter 2017. This BMP included a new curb installed on the north side of the road meant to convey flow to a new drop inlet and trench under the road, which then directs the collected runoff to CM-3 for treatment before entering the Northern Drainage. The Fourth Quarter 2018 activities included inspections of the BMPs, sediment removal from the drop inlet structure, repairing holes in the sheet metal wall on the northern side of the road near the inlet and securing the fiber rolls upgradient of CM-3 along the road.

Road Runoff Diversion to CM-1

The construction of a new road runoff diversion to CM-1 was completed during Fourth Quarter 2017 and the riprap berm was increased in height to treat the additional road runoff. The Fourth Quarter 2018 activities included BMP inspections and sediment removed from the drop inlet structure.

Former Building 1436 Detention Bioswales

Two detention bioswales were constructed at the former Building 1436 following its removal in Third Quarter 2014. The graded surface was hydroseeded, and more than 2,900 native plantings were installed in December 2014. The bioswales were designed to capture, pretreat, and detain runoff from the adjacent parking lot and from approximately 13.9 acres of drainage area east and upgradient prior to releasing the stormwater to the former Instrument and Equipment Laboratories (IEL) storm drain, where flow is diverted to the lower lot biofilter for treatment. The Fourth Quarter 2018 activities included BMP inspections and invasive plant removal adjacent to the bioswales.

Lower Lot Biofilter

The lower lot biofilter is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater runoff from the lower parking lot and former IEL watershed. The lower lot biofilter consists of a 30,000-gallon cistern, a stormwater conveyance line, a sedimentation basin, and a media biofilter.

The Fourth Quarter 2018 activities included inspections to verify that the sedimentation basin and biofilter were free of sediment and debris, checks of the Cistern area and pump, and inspections of surrounding BMPs. Approximately 377, 290 gallons of stormwater was pumped from the cistern to the sedimentation basin during the Fourth Quarter 2018. It is important to note that the cistern was without power for approximately four weeks from mid-November to mid-December.

NASA Expendable Launch Vehicle (ELV) Area BMPs

BMPs and drainage improvements were installed between June and October 2013 at the NASA ELV to improve the quality of stormwater runoff from the ELV area. Stormwater is gravity-driven through the tank system, starting with the settling tanks, then through the filter media tank, before discharging to a tributary that flows to Outfall 009. In the Second Quarter 2016, a sand bag berm was placed across the ELV asphalt swale to divert runoff toward CM-1 for treatment instead of directly discharging to the Northern Drainage. The Fourth Quarter 2018 activities included BMP inspections.



Administration Area Inlet Filters

Four storm drain inlets were modified with either drop inlet filters or weighted wattles filled with media mixtures during the Second Quarter 2017. At the inlet closest to the lower lot, a storm drain filter sock was also placed upstream of the inlet to increase solid settling. The Fourth Quarter 2018 activities included BMP inspections and sealing the lips of the inlet filters.

Well 13 Road

The sandbag berms located near the culvert inlet and downgradient of the hydroseeded area were reinforced and increased in height during Fourth Quarter 2017. The Fourth Quarter 2018 activities included BMP inspections.

Upper Parking Lot Media Filter

The construction of a media filter at the northeast corner of the upper parking lot was completed during the Second Quarter 2017. This BMP included a new media filter, similar in style to the B-1 media filter, designed to treat runoff from parts of the parking lot as well as parts of the adjacent Entrance Road. The Fourth Quarter 2018 activities included BMP inspections.

Creosote Treated Wood Poles

During Fourth Quarter 2017, creosote-treated wood poles had fiber roll installed around the base of the poles. The Fourth Quarter 2018 activities included BMP inspections.

Former Shooting Range

Prior to the Second Quarter 2018, existing BMPs at the Former Shooting Range consisted of:

- Slope stabilization measures (i.e., vegetation planting areas);
- Riprap berms along the Northern Drainage;
- A culvert maintenance media filter;
- Fiber rolls;
- Sandbag berm;
- Silt fencing;
- Constructed water bar across the trail;
- Three check structures on the Northern trail;
- Sandbags with fiber rolls;
- A check structure at the dissipater; and
- Hydroseeding.

The Fourth Quarter 2018 activities included BMP inspections.

Non-Industrial Sources Special Studies

The Expert Panel submitted a "Site-Wide Stormwater Work Plan and 2014/15 Annual Report" (2015 Work Plan) on behalf of Boeing in September of 2015 (Geosyntec and the Expert Panel, 2015) to meet the



requirements of the NPDES Permit (Order No. R4-2015-0033)². The 2015 Work Plan also included recommended non-industrial sources special studies intended to help identify sources of lead and dioxins within the Outfall 009 watershed. The special studies involve vacuum sampling pavement solids, pan sampling atmospheric deposition solids, soil sampling around treated wood poles, lead isotope sampling, and sediment and stormwater sampling at multiple locations along the Northern Drainage. No additional subset sampling pertaining to the various stormwater studies was conducted in the Fourth Quarter 2018. However, composite ash samples resulting from the Woolsey Wildfire were collected and are currently being analyzed and evaluated.

NORTHERN DRAINAGE BMPS

Boeing restored the Northern Drainage following cleanup activities performed under DTSC oversight and in accordance with the requirements of Regional Board's Cleanup and Abatement Order No. R4-2007-0054 (Regional Board, 2007). The restoration and mitigation activities proposed in the Northern Drainage Restoration, Mitigation, and Monitoring Plan (RMMP)³ were implemented in 2012. In accordance with the RMMP, regular maintenance, monitoring, and reporting were implemented in the Northern Drainage from 2012 through the Third Quarter 2017 for the stream's plant biology and geomorphology. The successful restoration and mitigation of the Northern Drainage per the success criteria of the RMMP were documented in the fifth and final Annual Mitigation Monitoring Report (Haley & Aldrich, 2017). Based on the success of the project, Boeing requested that the Regional Board provide written notice stating that Boeing has complied with all terms of the Cleanup and Abatement Order, and Boeing's obligations under the Order were terminated. Boeing will continue to inspect the Northern Drainage BMPs annually and maintain them on an as-needed basis. No RMMP-related inspections of Northern Drainage BMPs were performed during Fourth Quarter 2018.

OUTFALL 001/002 BMP COMPLIANCE REPORT RELATED ACTIVITIES

Boeing submitted a BMP Compliance Report to the Regional Board on June 16, 2017 discussing activities to reduce or eliminate benchmark exceedances for samples collected on January 21, 2017, from drainage at Outfalls 001 (iron, lead, manganese, and TCDD TEQ) and 002 (chronic toxicity and iron; Boeing, 2017). The BMP activities were completed during the Third Quarter 2017 and currently include sitewide BMP inspections. Boeing will submit a BMP Compliance Report to the Regional Board to discuss activities to reduce or eliminate benchmark exceedances for samples collected on December 7, 2018, for Outfall 002 (copper, iron, lead, selenium, and zinc) drainage.

The sampling frequency for iron and manganese at Outfall 001 was increased in January 2017 from once per year to once per discharge until four consecutive sample results demonstrate compliance per the NPDES Permit. There were no discharges at Outfall 001 during the remainder of 2017 or in 2018; therefore, none of the required four consecutive samples have been collected to date.

The sampling frequency of iron at Outfall 002 was increased in January 2017 from once per year to once per discharge until four consecutive sample results demonstrate compliance per the NPDES Permit and will continue to be sampled once per discharge following the December 2018 exceedance.

Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the watersheds of Outfall 001 and Outfall 002 as discussed in the 2018 Expert Panel Annual Report (Geosyntec and the Expert Panel, 2018).

² Available at: http://www.boeing.com/principles/environment/santa-susana/permits.page

³ Available at: http://www.boeing.com/principles/environment/santa-susana/technical-reports.page



REASONABLE POTENTIAL ANALYSIS

Stormwater discharges from the Santa Susana Site occurred at Outfalls 002, 008, and 009 during the Fourth Quarter 2018. Analytical results from this quarter were added to the Reasonable Potential Analysis dataset. RPA analysis was performed for *E. coli* for Outfall 008; these analyses are discussed below, and Boeing believes they did not trigger reasonable potential (Appendix F). The analytical results for the Fourth Quarter 2018 did not trigger a reasonable potential for any other constituent not already regulated under the current NPDES Permit.

Bacteria

On December 6, 2018, *E. coli* was detected in stormwater samples collected from Outfall 008 at 8,500 MPN/100 milliliters. Outfall 008 was also analyzed for human-specific Bacteroides to confirm if the bacteria present in these samples were from human sources. Bacteroides analysis did not identify human-specific markers at Outfall 008. As such, Boeing believes that no reasonable potential has been demonstrated for human-caused *E. coli* at Outfall 008, and that the detected *E. coli* was caused by the animals that live at or cross through the Santa Susana Site.

DATA VALIDATION AND QUALITY CONTROL

In accordance with current federal and state EPA guidelines and procedures, or as specified in the NPDES Monitoring and Reporting Program, samples were analyzed at a State of California-certified laboratory. Data validation was performed on the analytical results, and quality control elements were found to be within acceptable limits for the analytical methods reported, except as noted on the analytical summary tables. Measures were implemented by the analytical laboratory to monitor and/or evaluate low level detections, analyze for interferences, and ensure that cross-contamination did not occur. Laboratory analytical reports, including validation reports and notes, are included in Appendix E.

Attachment H of the NPDES Permit presents the SWRCB's minimum levels laboratories are expected to achieve for reporting and determining compliance with NPDES Permit limits. The analytical laboratory achieved these minimum levels in the Fourth Quarter 2018 except when reporting limits were above the minimum levels (generally due to matrix). In cases where the NPDES Permit limit was less than the reporting limit and minimum level, the reporting limit was used to determine compliance.

CONCLUSIONS

Boeing continues to improve water quality at stormwater discharge locations at the Santa Susana Site through methods designed to preserve the natural conditions in the watershed to the maximum extent feasible by implementing distributed, sustainable erosion control/restoration measures. The Woolsey Wildfire damaged the site BMPs and caused significant vegetation loss. In addition, numerous scientific studies and literature have demonstrated that wildfires cause increases in the deposition of naturally occurring metals, dioxins and naturally occurring radionuclides. Despite Boeing's tremendous and ongoing wildfire recovery efforts, the results in this report indicate that increased turbidity of stormwater due to the fire resulted in some increased levels of metals, dioxins and gross alpha during the December 5-7, 2018 rain event. Boeing's ongoing collaboration with the Expert Panel will enable Boeing to utilize the best science as we continue to stabilize soils, and repair and improve the onsite stormwater management system.



FACILITY CONTACT

If there are any questions regarding this report or its enclosures, you may contact Mr. Jeffrey Wokurka of Boeing at (818) 466-8800.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on the 15th of February 2019 at The Boeing Company, Santa Susana Site.

Sincerely,

David W. Dassler P.E.

Remediation Program Manager Environment, Health & Safety

Enclosures:

References

Figure 1 – Site Map with Stormwater Collection and Conveyance System, RSW-001 Sampling Location, and Site Features

Figure 2 – Arroyo Simi Receiving Water – (RSW-002, Frontier Park) Sampling Location

Appendix A – Fourth Quarter 2018 Rainfall Data Summary

Appendix B - Fourth Quarter 2018 Waste Shipment Summary Tables

Appendix C – Fourth Quarter 2018 Discharge Monitoring Data Summary Tables

Appendix D – Fourth Quarter 2018 NPDES Permit Limit Exceedances

Appendix E – Fourth Quarter 2018 Analytical Laboratory Reports, Chain of Custody Forms, and Validation Reports

Appendix F - Fourth Quarter 2018 Reasonable Potential Analysis Tables

c: Ms. Cassandra Owens, RWQCB Mr. Mark Malinowski, DTSC California State University – Northridge, Library Simi Valley Public Library Los Angeles Public Library, Platt Branch

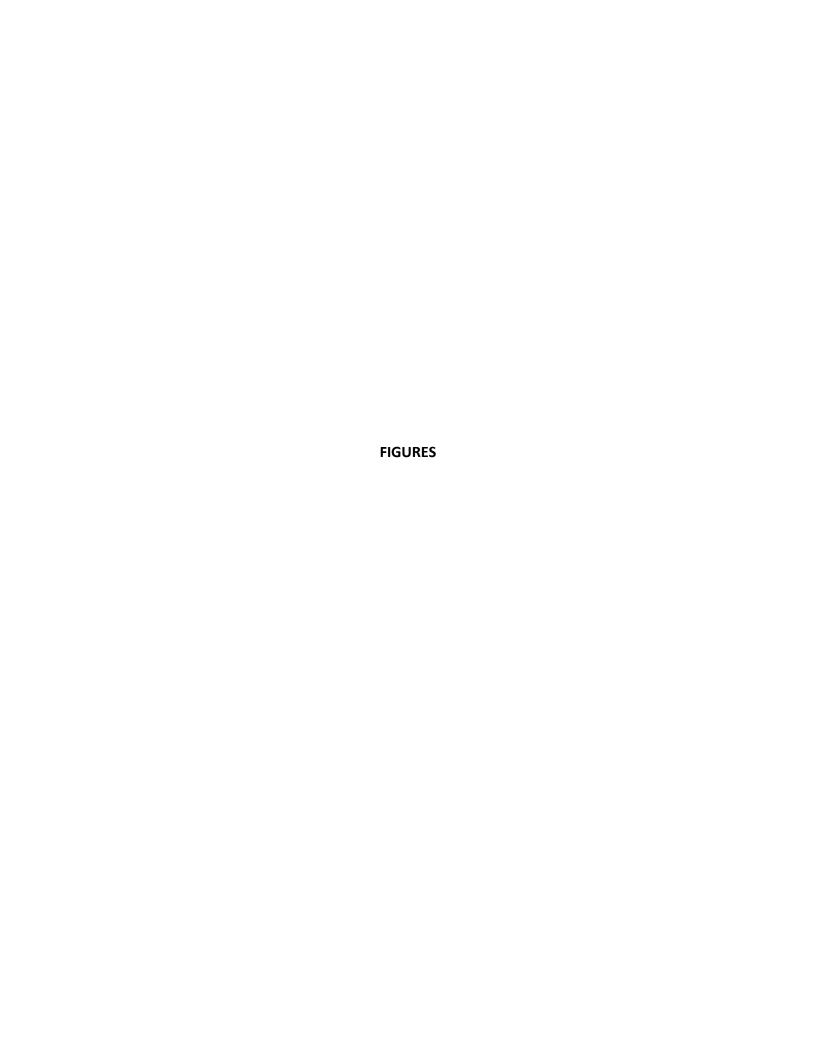


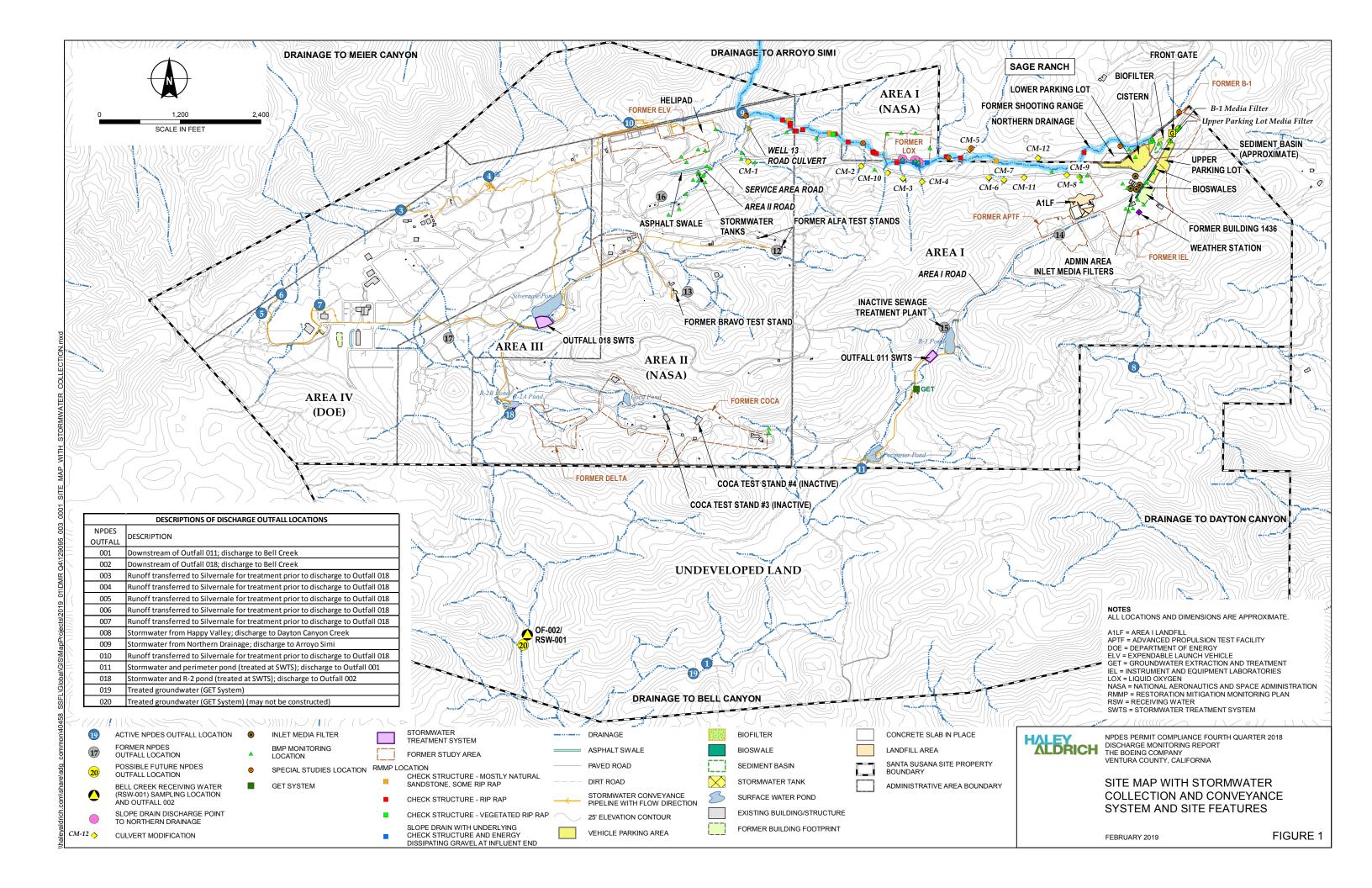
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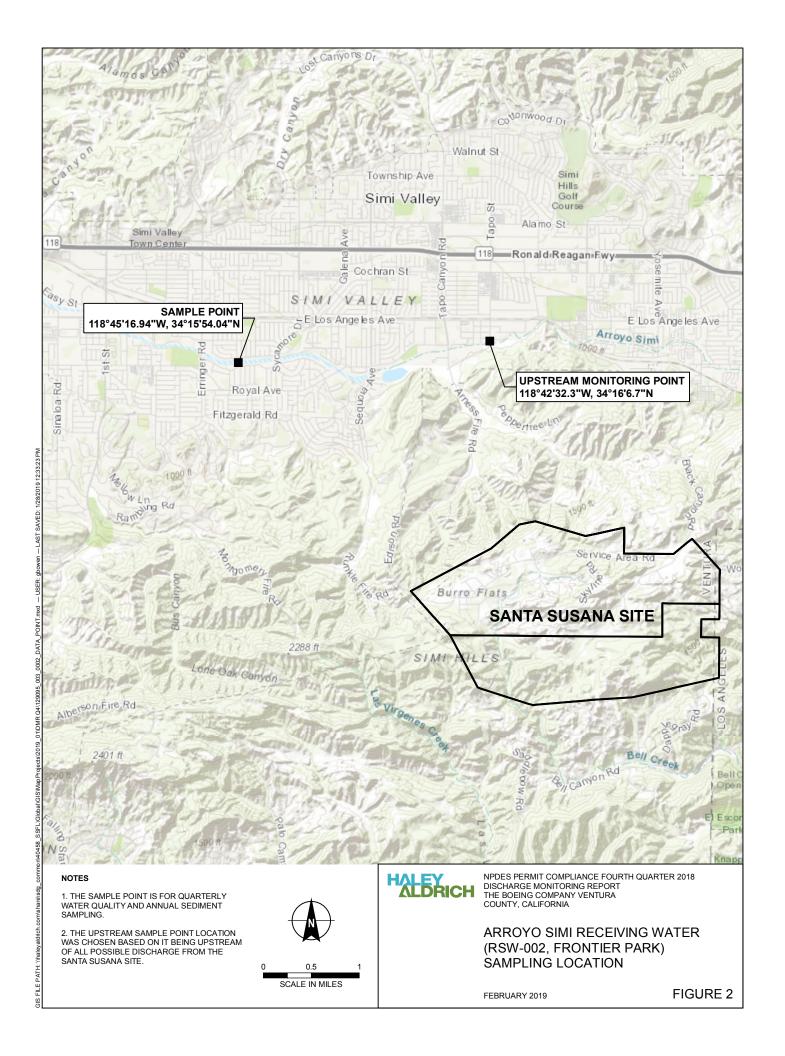
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APPENDIX A

Fourth Quarter 2018 Rainfall Data Summary

TABLE A DAILY RAINFALL SUMMARY

THE BOEING COMPANY NPDES PERMIT CA0001309

Station: AREA 1
Parameter: Rain

Month/Year: October 2018

HOUR OF THE DAY, PACIFIC STANDARD TIME

	HR-BEG	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	HR-END	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Γ	DAY																									Total
Γ	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Υ	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
_	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u> </u>	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.13	0.11	0.03	0.39
F	13	0.01	0.02	0.01	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
_	14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Τ	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u> </u>	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
⊦	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u> </u>	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N T	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
н́Н	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
¬ ⊦	24	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00 d	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ŀ	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3 i	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Flags: d = Off-line part of hour, invalid hour due to semi-annual audit (October 25). For the off-line event, staff on-site and the rain gauge at Sage Ranch confirmed that no rainfall was recorded on October 25 during hours 06:00-07:00 and 07:00-08:00.

TABLE A DAILY RAINFALL SUMMARY

THE BOEING COMPANY NPDES PERMIT CA0001309

Station: AREA 1 Parameter: Rain

Month/Year: November 2018

HOUR OF THE DAY, PACIFIC STANDARD TIME

г	ID DEO	_	4	_	_	-	_	•	- 1					40				40	4-	40	40		04			
<u> </u>	HR-BEG	0	1	2	3	4	5	6 7	1	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
-	HR-END	1	2	3	4	5	6	-/	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	\vdash
-	DAY																									Total
L	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
L	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
L	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
L	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
_	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
D	8	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Α _	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
Υ	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
o	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
F	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
L	14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
T L	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
Н	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
E	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
M	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
N	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.17	
T	22	0.26	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Н	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.04	0.07
	29	0.11	0.02	0.06	0.01	0.04	0.09	0.30	0.09	0.07	0.00	0.00	0.17	0.00	0.00	0.00	0.04	0.03	0.02	0.05	0.00	0.00	0.00	0.00	0.00	1.10
	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE A DAILY RAINFALL SUMMARY

THE BOEING COMPANY NPDES PERMIT CA0001309

Station: AREA 1 Parameter: Rain

Month/Year: December 2018

HOUR OF THE DAY, PACIFIC STANDARD TIME

		HOUR OF THE DAY, PACIFIC STANDARD TIME																								
	IR-BEG	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
L	HR-END	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
	DAY																									Total
	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.03	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04	0.08	0.07	0.02	0.09	0.22	0.17	0.07	0.03	0.10	1.03
	6	0.05	0.10	0.05	0.03	0.01	0.12	0.21	0.19	0.44	0.27	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48
	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Α _	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Υ	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F _	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0 _	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Τ _	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
н _	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX B

Fourth Quarter 2018 Waste Shipment Summary Tables

TABLE B LIQUID WASTE SHIPMENTS

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF WASTE	QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	TRANSPORTER 3	DESTINATION
	019416091JJK	Hazardous Waste, Liquid, N.O.S., (Trichloroethylene)	19,040	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061			US Ecology Vernon Inc. 5375 South Boyle Avenue Los Angeles, CA 90058
10/4/2018	1020180021	Non Hazardous Waste, Liquid, (Decon Water)	4,600	G	American Integrated Services, Inc. 1502 E Opp St			Crosby & Overton 1630 W 17th St
	1020180022	Non Hazardous Waste, Liquid, (Decon Water)	2,560	G	Wilmington, CA 90744			Long Beach, CA 90813
	040440450 LW	Waste Permanganates, Inorganic, Aqueous Solution, N.O.S, (Sodium Permanganate)	920	Р		n/a	n/a	Clean Harbors Aragonite LLC
	019416456JJK —	Waste Permanganates, Inorganic, Aqueous Solution, N.O.S, (Sodium Permanganate)	64	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061			11600 North Aptus Road Grantsville, Utah 84029
11/14/2018	019416457JJK	Hazardous Waste, Liquid, N.O.S., (Trichloroethylene)	472	Р				
11/14/2016		Non-RCRA Hazardous Waste, Liquids, (Oil, Water)	8	Р				Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
		Non-RCRA Hazardous Waste, Liquids, (Oil, Water)	20	Р				
	NH1805668458	Non Hazardous, Non D.O.T. Regulated, (Water)	550	Р				Clean Harbors Buttonwillow, LLC 2500 West Lokern Road Buttonwillow, CA 93206
12/12/2018	012730401FLE	Hazardous Waste Liquid, (Trichloroethylene, Resin Beads)	155	Р		Basin Transportation LLC 130 Express Lane McAlester, OK 74501	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Clean Harbors Deer Park, LLC 2027 Independence Parkway South La Porte, TX 77571
	019183301JJK	Hazardous Waste, Liquid, N.O.S., (Lead)	15	G	American Integrated Services, Inc. 1502 E Opp St Wilmington, CA 90744		n/a	Crosby & Overton 1630 W 17th St
12/14/2018		Hazardous Waste, Liquid, N.O.S, (Lead)	10	G		n/a		Long Beach, CA 90813
	019183345JJK	Non-RCRA Hazardous Waste, Liquid, (Hydraulic Oil)	30	G				Demenno/Kerdoon 2000 N Alameda St Compton, CA 90222

TABLE B LIQUID WASTE SHIPMENTS

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF WASTE	QTY. U	JNITS	TRANSPORTER 1	TRANSPORTER 2	TRANSPORTER 3	DESTINATION
10/10/2018	19056	Flush Water with Trace Sewage, (Clarifier)	5,000	G				
10/10/2016	19057	Flush Water with Trace Sewage, (Clarifier)	5,000	G				
10/24/2018	19139	Flush Water with Trace Sewage, (Clarifier)	5,000	G		n/a	n/a	Southwest Processors 4120 Bandini Blvd. Vernon, CA 90058
10/24/2016	19140	Flush Water with Trace Sewage, (Clarifier)	5,000	G				
11/7/2018	19212	Flush Water with Trace Sewage, (Clarifier)	5,000	G	Southwest Processors 4120 Bandini Blvd. Vernon, CA 90058			
11///2016	19213	Flush Water with Trace Sewage, (Clarifier)	5,000	G				
11/20/2018	19249	Flush Water with Trace Sewage, (Clarifier)	5,000	G				
11/20/2018	19250	Flush Water with Trace Sewage, (Clarifier)	5,000	G				
12/5/2018	19368	Flush Water with Trace Sewage, (Holding Tank)	5,000	G				
12/5/2018	19374	Flush Water with Trace Sewage, (Holding Tank)	5,000	G				
12/19/2018	19474	Flush Water with Trace Sewage, (Holding Tank)	4,900	G				
12/19/2018	19475	Flush Water with Trace Sewage, (Clarifier)	5,000	G				

Notes: G = Gallons n/a = Not Applicable P = Pounds

TABLE B SOLID WASTE SHIPMENTS

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF WASTE	QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	TRANSPORTER 3	DESTINATION	
10/5/2018	1020180025	Non Hazardous Waste, Solid, (Soil)	54	Р	American Integrated Services, Inc. 1502 E Opp St Wilmington, CA 90744			Crosby & Overton 1630 W 17th St Long Beach, CA 90813	
	019416457JJK	Waste Environmentally Hazardous Substances, Solid, N.O.S, (Trichloroethylene, Perchloroethylene)	38	Р					
44/44/0040	NH1805668425-A	Non Hazardous, Non D.O.T. Regulated Material, (Debris)	315	315 P			Clean Harbors Wilmington LLC		
11/14/2018	NH1805668425-B	Batteries, Dry, Sealed, N.O.S, (Alkaline Batteries), (Universal Waste)	38	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a n/a		1737 East Denni Street Wilmington, CA 90744	
	N111003000423-B	Universal Waste, (Electronic Devices)	95	Р					
11/15/2018	NH1805673823	Non Hazardous, Non D.O.T. Regulated, (Ion Exchange Resin)	20	Р				Clean Harbors Buttonwillow, LLC 2500 West Lokern Road Buttonwillow, CA 93206	
	018217703JJK	Hazardous Waste, Solid, N.O.S, (Tank Debris)	6	Т	D And S Trucking 4822 Avenal St Phelan, CA 92371 Espinosa M Trucking 1127 Meadowside St West Covina, CA 91792 S & V Trucking 9243 Camulos Ave		US Ecology Nevada Highway 95 11 Miles South Beatty, NV 89003		
12/5/2018	018217704JJK	Hazardous Waste, Solid, N.O.S, (Tank Debris)	7	Т					
	018217705JJK	Hazardous Waste, Solid, N.O.S, (Tank Debris)	10	S & V Trucking					
12/6/2018	018217706JJK	Hazardous Waste, Solid, N.O.S, (Tank Debris)	10	Т	Montclair, CA91763				
		Non-RCRA Hazardous Waste, Solids, (Ammonium Dihydrogen, Sand)	201	Р					Clean Harbors Wilmington LLC 1737 East Denni Street
40/40/0040	012730369FLE -	Non-RCRA Hazardous Waste, Solids, (Toner Cartridges)	(Toner Cartridges) Glean Harbors Environmental Services, Inc.	Clean Harbors Environmental Services, Inc.			Wilmington, CA 90744		
12/12/2018	012730401FLE	Hazardous Waste, Solid, N.O.S, (Trichloroethylene)	13,058	Р	42 Longwater Drive Norwell, MA 02061	Basin Transportation LLC 130 Express Lane McAlester, OK 74501	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Clean Harbors Deer Park, LLC 2027 Independence Parkway South La Porte, TX 77571	
	NH1806312716	Non Hazardous, Non D.O.T. Regulated Material, (Debris)	48	Р		Tristate Motor Transit Co. 8141 East 7th Street Joplin, MO 64801	n/a	Clean Harbors Grassy Mountain, LLC 3 Miles East, 7 Miles North of Knolls Grantsville, Utah 84029	
12/14/2018	019183301JJK	Hazardous Waste, Solid, N.O.S, (Lead)	100	Р	American Integrated Services, Inc. 1502 E Opp St Wilmington, CA 90744	n/a	II/a	Crosby & Overton 1630 W 17th St Long Beach, CA 90813	

Notes:

n/a = Not Applicable P = Pounds

T = tons

TABLE B FLAMMABLE WASTE SHIPMENTS

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF WASTE	QTY. UNITS	TRANSPORTER 1	TRANSPORTER 2	TRANSPORTER 3	DESTINATION
12/14/2018	019183345JJK	Combustible Liquid, N.O.S., (RP-1 Jet Fuel)	40 G	American Integrated Services, Inc. 1502 E Opp St Wilmington, CA 90744	n/a	n/a	Demenno/Kerdoon 2000 N Alameda St Compton, CA 90222

Notes:

G = Gallons

APPENDIX C

Fourth Quarter 2018 Discharge Monitoring Data Summary Tables

Not all of the following notes, abbreviations, symbols, or acronyms occur on every table:

- 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalents (TEQs) for the purpose of determining permit compliance are the sum of the products of the detected dioxin congener concentration multiplied by that congener's toxicity equivalency factor (TEF) and bioaccumulation equivalency factor (BEF). The resulting compliance TCDD TEQ does not include those congener concentrations that are reported as detected but not quantified (DNQ), as specified on page 26 of the NPDES permit (Water Board, 2015).
- 2. Temperature, total residual chlorine (TRC), dissolved oxygen (DO), and pH are measured in the field and are not validated.
- 3. pH and temperature are identified on the table as daily maximum discharge limits. The NPDES permit limit has an instantaneous minimum (6.5) and maximum (8.5) for pH and an instantaneous maximum of 86°F for temperature.
- 4. Exceedances are defined on page 6 of the NPDES permit as constituents in excess of daily maximum benchmark limits, daily maximum permit limits, or receiving water limits. Analytical concentrations or calculations to determine compliance to the NPDES permit are reported with the same number of significant figures as the daily maximum benchmark limits, daily maximum permit limits, or receiving water limits.
- 5. Priority pollutants, sampled once every five years, at Arroyo Simi Receiving Water sampling location (RSW-002, Frontier Park) were analyzed during the First Quarter 2018.
- 6. Dissolved metals are filtered by the laboratory and reported as "Metal, dissolved". Total metals are not filtered by the laboratory and reported as "Metal".
- 7. Abbreviations, symbols, and acronyms:

-92.9 +/-200	A negative radiochemical analytical result indicates the count rate of the sample was less than the background condition. Radiological results are presented as activity plus or minus total uncertainty.
%	Percent.
\$	Reported result or other information was incorrectly reported by the laboratory; result was corrected by the data validator.
	Based on validation of the data, a qualifier was not required.
-/-	No NPDES permit limit established for daily maximum or monthly average.
<(value)	Analyte not detected at a concentration greater than or equal to the detection limit (DL), method detection limit (MDL), or laboratory reporting limit (RL); see laboratory report for specific detail.
>(value)	Greater than most probable number.
*	Result not validated.
**	Flow for each outfall is calculated over the 24-hour period when the outfall autosampler is operating to collect the composite sample. See definition of "Daily Discharge" on page A-2 of attachment A of the NPDES permit.
*1	Improper preservation of sample.

*2	The inductively coupled plasma (ICP)/matrix spike (MS) parts per billion (ppb) check standard was recovered above the control limit; therefore, the constituent detected was qualified as estimated (J).
*3	Initial and or continuing calibration recoveries were outside acceptable control limits.
*5	Blank spike/blank spike duplicate relative percent difference was outside the control limit.
*10	Value was estimated detect or estimated non-detect (J, UJ) due to deficiencies in quantitation of the constituent including constituents reported by the laboratory as estimated maximum possible concentration (EMPC) values.
*11	No calibration was performed for this compound; result is reported as a tentatively identified compound (TIC).
* *	Unusual problems found with the data that have been described in Section II, "sample management", or Section III, "method analysis". The number following the asterisk (*) will indicated the validation report section where a description of the problem can be found.
ANR	Analysis not required; e.g., constituent or outfall was not required by the NPDES permit to be sampled and analyzed over the reporting period (annual, semi-annual, etc.).
Avg	Average.
В	Laboratory method blank contamination.
BA	Relative percent difference out of control.
BEF	Bioaccumulation equivalency factor.
BU	Analyzed out of holding time.
BV	Sample received after holding time expired.
С	Calibration percent relative standard deviation (%RSD) or percent difference (%D) were noncompliant.
CaCO3	Calcium carbonate
Comp	Composite sample type.
C5	Calibration verification percent recovery (%R) was outside method control limits.
CEs/100 ml	Cell equivalents per 100 milliliters.
D	The analysis with this flag should not be used because another more technically sound analysis is available.
%D	Percent difference between the initial and continuing calibration relative response factors.
Deg C	Degrees Celsius.
Deg F	Degrees Fahrenheit.
DL	Detection limit.
DNQ	Detected but not quantified (constituent value greater than or equal to the laboratory method detection limit and less than the laboratory reporting limit).
E	E in validation qualifier indicates that duplicates show poor agreement.
EB	Equipment blank.

EMPC	Estimated maximum possible concentration.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
FB	Field blank.
F1	Matrix spike (MS) and/or matrix spike duplicate (MSD) recovery is outside acceptance limits.
ft/sec	Feet per second.
G	Gallons.
gpd	Gallons per day.
Н	Holding time was exceeded.
Hardness	Equivalent of calcium carbonate (CaCO3).
Нр	Hepta.
Нх	Hexa.
ICP	Interference check solution results were unsatisfactory.
J	Estimated value.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
J, DX	Estimated value, value < lowest standard method quantitation limit (MQL), but > than method detection limit (MDL).
К	The sample dilution's set-up did not meet the oxygen depletion criteria of at least 2 milligrams per liter (mg/L); therefore, the reported result is an estimated value only.
L	Laboratory control sample percent recovery (%R) was outside control limits.
L1	Laboratory control standard (LCS)/laboratory control standard duplicate (LCSD), relative percent difference (RPD) was outside the control limit.
L2	The laboratory control sample percent recovery (%R) was below the method control limits.
LBS/DAY	Pounds per day.
LCS	Laboratory control standard.
LCSD	Laboratory control standard duplicate.
LQ	Laboratory control standard (LCS)/ laboratory control standard duplicate (LCSD) recovery above method control limits.
M1	Matrix spike (MS) and/or matrix spike duplicate (MSD) were above the acceptance limits due to sample matrix interference.
M2	The matrix spike (MS) and/or matrix spike duplicate (MSD) were below the acceptance limits due to sample matrix interference.
Max	Maximum.
MB	Analyte present in the method blank.
MDA/MDC	Minimum detectable activity/minimum detectable concentration.
MDL	Method detection limit.

MFL Million fibers per liter. MGD Million gallons per day. MHA Due to high level of analyte in the sample, the matrix spike (MS)/matrix spike duplicate (MSD) calculation does not provide useful spike recovery information. mg/L Milligrams per liter. mg/kg Milligrams per kilogram. MI/L/hr Millilitiers per liter per hour. MPN/100 mL Most probable number per 100 milliliters. MQL Method quantitation limit. MS Matrix spike. MSD Matrix spike duplicate. mS/cm MillSiemens per centimeter NA Not applicable; no NPDES permit limit established for the constituent and/or outfall or analyte not required per receiving water monitoring requirements. ND Analyte not detected. NM Not measured or determined or minimum detectable activities (MDAs) are not calculated as there is no statistical method for combining MDAs. NPDES National Pollutant Discharge Elimination System. NTU Nephelometric turbidity unit. OCDD Octa CDF. P Pounds. ppb Parts per billion. PCi/L PicoCuries per liter.	Meas	Measure sample type.
MHA Due to high level of analyte in the sample, the matrix spike (MS)/matrix spike duplicate (MSD) calculation does not provide useful spike recovery information. mg/L Milligrams per liter. mg/kg Milligrams per kilogram. mm/L/hr Milliliters per liter per hour. MPN/100 mL Most probable number per 100 milliliters. MQL Method quantitation limit. MS Matrix spike. MSD Matrix spike duplicate. mS/cm MilliSiemens per centimeter NA Not applicable; no NPDES permit limit established for the constituent and/or outfall or analyte not required per receiving water monitoring requirements. ND Analyte not detected. NM Not measured or determined or minimum detectable activities (MDAs) are not calculated as there is no statistical method for combining MDAs. NPDES National Pollutant Discharge Elimination System. NTU Nephelometric turbidity unit. OCDD Octa CDD. OCDF Octa CDF. P Pounds. ppb Parts per billion. pCi/L PicoCuries per liter. Pe Penta. q The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not meet qualitative identification criteria and indicates a possible interference. Q Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit. R As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. (R) Percent recovery (%R) for calibration not within control limits. RL Laboratory reporting limit.	MFL	Million fibers per liter.
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OCDF Octa CDF. Pounds. Pounds. ppb Parts per billion. pCi/L PicoCuries per liter. Pe Penta. q The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not meet qualitative identification criteria and indicates a possible interference. Q Matrix spike (MS) recovery outside of control limits. Q1 Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit. R As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. (R) Percent recovery (%R) for calibration not within control limits. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	NTU	Nephelometric turbidity unit.
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Pe Penta. The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not meet qualitative identification criteria and indicates a possible interference. Matrix spike (MS) recovery outside of control limits. Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit. As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. Reporting limit. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	ppb	Parts per billion.
The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not meet qualitative identification criteria and indicates a possible interference. Matrix spike (MS) recovery outside of control limits. Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit. As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. Reporting limit. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	pCi/L	PicoCuries per liter.
analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not meet qualitative identification criteria and indicates a possible interference. Q Matrix spike (MS) recovery outside of control limits. Q1 Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit. R As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. (R) Percent recovery (%R) for calibration not within control limits. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	Pe	Penta.
Q1 Matrix spike (MS)/matrix spike duplicate (MSD) relative percent difference (RPD) was outside the control limit. R As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. (R) Percent recovery (%R) for calibration not within control limits. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	q	analyte, quantitated using the theoretical ion ratio; the measured ion ratio does not
was outside the control limit. R As a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified. (R) Percent recovery (%R) for calibration not within control limits. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	Q	Matrix spike (MS) recovery outside of control limits.
cannot be verified. (R) Percent recovery (%R) for calibration not within control limits. RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	Q1	
RL Laboratory reporting limit. RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	R	· · · · · · · · · · · · · · · · · · ·
RL-1 Reporting limit raised due to sample matrix effects. RPD Relative percent difference.	(R)	Percent recovery (%R) for calibration not within control limits.
RPD Relative percent difference.	RL	Laboratory reporting limit.
	RL-1	Reporting limit raised due to sample matrix effects.
%R Percent recovery.	RPD	Relative percent difference.
	%R	Percent recovery.

REPORTING SUMMARY NOTES THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

%RSD	Percent relative standard deviation.
% Normal/Alive	Percent normal and alive.
% Survival	Percent survival.
S	Surrogate recovery was outside control limits.
s.u.	Standard unit.
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin.
TCDF	2,3,7,8-tetrachlorodibenzo-p-furan.
TEQ	Toxic equivalent.
TIC	Tentatively identified compound
TIE	Toxicity identification evaluation
TOC	Total organic carbon
Т	Presumed contamination, as indicated by a detect in the trip blank.
U	Result not detected.
μg/L	Micrograms per liter.
μg/g	Micrograms per gram.
μg/kg	Micrograms per kilogram.
µmhos/cm	Micromhos per centimeter.
UJ	Result not detected at the estimated reporting limit.
WHO TEF	World Health Organization toxic equivalency factor.
w/out	Without.
۸	Analysis not completed due to hold time exceedance or insufficient sample volume.
#	Per Order No. R4-2015-0033, page 16, Footnote 1. The effluent limitations for total suspended solids and settleable solids are not applicable for discharges during wet weather. During wet weather flow, a discharge event is greater than 0.1 inch of rainfall in a 24-hour period. No more than one sample per week need be obtained during extended periods of rainfall or the discharge of collected stormwater. A storm event must be preceded by at least 72 hours of dry weather.
(1)	Based on the NPDES permit, table E-3a footnote 2, receiving water samples for pH, hardness, and priority pollutants must be collected on the same day as effluent samples.
(2)	Additional sample, not required by the NPDES permit.
(4.0)3.1/-	Represents (dry weather limit) wet weather limit / monthly average limit.
(3)	Secondary maximum contaminant level.
(4)	The drinking water maximum contaminant level of 3.00E-05 µg/L is for the dioxin congener 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). TCDD Toxic Equivalent (TEQ) without detected but not quantified (DNQ) values is the sum of the products of the detected dioxin congener concentration multiplied by that congener's toxic Equivalency factor (TEF) and bioaccumulation equivalency factor (BEF). There are 17 dioxin congeners.

REPORTING SUMMARY NOTES THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

(a)	Based on Order No. R4-2015-0033, page 17, footnote 7, sampling event is a dry discharge and the NPDES Permit Limit is 4.03 ug/L and 3.93 lbs/day at OF001,002,011,018 and 0.24 lbs/day at OF008.
(b)	Based on Order No. R4-2015-0033, page 17, footnote 7, sampling event is a wet discharge and the NPDES Permit Limit is 3.1 ug/L and 4.91 lbs/day at OF001,002,011,018 and 3.05 lbs/day at OF008.
(c)	Based on Order No. R4-2015-0033, page 16, footnote 1, sampled during wet weather flow. The effluent limitations for total suspended solids and settleable solids are not applicable for discharges during wet weather.
(d)	Based on Order No. R4-2015-0033, page 16, footnote 1, sampled during dry weather flow. The effluent limitations for total suspended solids and settleable solids are applicable for discharges during dry weather.
(e)	Based on Order No. R4-2015-0033, page 17, footnote 8, sampling event is a dry discharge and the NPDES Permit Limit is 5 ug/L and 4.91 lbs/day.
(f)	Based on Order No. R4-2015-0033, page 17, footnote 8, sampling event is a wet discharge and the NPDES Permit Limit is 8.2 ug/L and 8.06 lbs/day.
(g)	The frequency of Iron and Manganese at Outfall 001 is increased from once per year to once per discharge until four consecutive sample results demonstrate compliance per the NPDES permit.
(h)	Total Ammonia is reported in wet weight units milligrams per kilogram (mg/kg).
(i)	Total organic carbon (TOC) is reported in dry weight units. Permit asks for TOC units in % dry weight, but data is provided in dry unit milligrams per kilogram (mg/kg).
(j)	Analyte does not have a receiving water limit for Bell Creek Receiving Water (RSW-001, OF002).
(k)	The frequency of Iron at Outfall 002 is increased from once per year to once per discharge until four consecutive sample results demonstrate compliance per the NPDES Permit.

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/06/2018 9:45:00 - 12/07/2		2018 10:05
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83/-	1/Discharge	1/Quarter	-/-	Meas	0.003577	*
CONVENTIONAL POLLUTANTS								
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg.	-	30	1/Discharge	NA	-/-	Composite	3.7	-
Oil & Grease	mg/L	15	1/Discharge	NA	-/-	Grab	ND < 1.5	U
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	1/Quarter	6.5-8.5/-	Grab	7.11	*
Total Suspended Solids#	mg/L	45/-	1/Discharge	1/Year	-/-	Composite	340 ^(c)	
PRIORITY POLLUTANTS		0.0/	4/Dih	4/5 \/	,	0	ND < 0.25	
1,1-Dichloroethene 1,2-Dichloroethane	μg/L	6.0/- 0.50/-	1/Discharge 1/Discharge	1/5 Years 1/5 Years	-/- -/-	Grab Grab	ND < 0.25 ND < 0.25	U
2.4.6-Trichlorophenol	μg/L μg/L	13.0/-	1/Discharge	1/5 Years	-/-	Composite	ND < 0.25	U
2,4-Dinitrotoluene	μg/L	18.0/-	1/Discharge	1/5 Years	-/-	Composite	ND < 3.05	Ü
alpha-BHC	µg/L	0.03/-	1/Discharge	1/5 Years	-/-	Composite	ND < 0.0023	U
Antimony	μg/L	6.0/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Arsenic	μg/L	10.0/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Beryllium	μg/L	4.0/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	μg/L	4.0/-	1/Discharge	1/5 Years	-/-	Composite	ND < 3.05	U
Cadmium	μg/L	(4.0) 3.1/- ^(a)	1/Discharge	1/5 Years	-/-	Composite	1.6 ^(b)	
Chromium VI (Hexavalent)	μg/L	16/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Copper	μg/L	14.0/-	1/Discharge	1/5 Years	-/-	Composite	52	
Cyanide	μg/L	8.5/-	1/Discharge	1/5 Years	-/-	Composite	ND < 2.5	UJ (H)
Lead	μg/L	5.2/-	1/Discharge	1/5 Years	-/-	Composite	88 ND +0.40	 U
Mercury	μg/L	0.1/- 94/-	1/Discharge 1/Year	1/5 Years 1/5 Years	-/-	Composite Composite	ND < 0.10 ANR	
N-Nitrosodimethylamine	μg/L μg/L	16.0/-	1/Discharge	1/5 Years	-/- -/-	Composite	ND < 0.458	ANR U
Pentachlorophenol	μg/L	16.5/-	1/Discharge	1/5 Years	-/-	Composite	ND < 1.53	U
Selenium	µg/L	(5) 8.2/-	1/Discharge	1/5 Years	-/-	Composite	11 ^(f)	J- (Q)
Silver	µg/L	4.1/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Thallium	μg/L	2.0/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Trichloroethene	μg/L	5.0/-	1/Discharge	1/5 Years	-/-	Grab	ND < 0.25	U
Zinc	μg/L	119/-	1/Discharge	1/5 Years	-/-	Composite	430	
NON-CONVENTIONAL POLLUTANTS								
Ammonia - N	mg/L	10.1/-	1/Discharge	NA	-/-	Composite	0.264	-
Barium	mg/L	1.0/-	1/Year	NA	-/-	Composite	ANR	ANR
Chloride	mg/L	150/-	1/Discharge	NA	-/-	Composite	2.7	
Chlorine, Total Residual	mg/L	0.1/-	1/Year	NA	-/-	Grab	ANR	ANR
Chronic Toxicity	% Effect	Pass or % Effect <50	1st & 2nd rain event/Year	NA	-/-	Composite	Pass, -19.66	
Detergents (as MBAS)	mg/L	0.50/-	1/Discharge	NA	-/-	Composite	ND < 0.050	UJ (Q, Q1)
Fluoride	mg/L	1.6/-	1/Year	NA (b)	-/-	Composite	ANR	ANR
Iron	mg/L	0.30/-	1/Discharge ^(k)	1/Discharge ^(k)	-/-	Composite	98 AND	
Manganese Nitrate + Nitrite as Nitrogen (N)	μg/L	50/- 8.0/-	1/Year 1/Discharge	NA NA	-/- -/-	Composite Composite	ANR 1.4	ANR
Nitrate - N	mg/L mg/L	8.0/-	1/Discharge	NA NA	-/-	Composite	1.4	-
Nitrite - N	mg/L	1.0/-	1/Discharge	NA NA	-/-	Composite	0.025	J (DNQ)
Perchlorate	μg/L	6.0/-	1/Discharge	NA NA	-/-	Composite	ND < 0.95	U
Settleable Solids#	ml/L/hr	0.3/-	1/Discharge	NA	-/-	Grab	0.10 ^(c)	_
Sulfate	mg/L	300/-	1/Discharge	NA	-/-	Composite	7.7	-
Temperature (Field)	Deg F	86/-	1/Discharge	1/Quarter	-/-	Grab	45.4	*
Total Dissolved Solids	mg/L	950/-	1/Discharge	NA	-/-	Composite	250	
REMAINING PRIORITY POLLUTANTS								
1,1,1-Trichloroethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
1,1,2,2-Tetrachloroethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
1,1,2-Trichloroethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
1,1-Dichloroethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
1,2,4-Trichlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
1,2-Dichlorobenzene 1.2-Dichlorobenzene	μg/L	-/-	1/Year 1/Year	1/5 Years 1/5 Years	-/- -/-	Grab Composite	ND < 0.25 ANR	U ANR
1,2-Dichloropropane	μg/L μg/L	-/-	1/Year	1/5 Years 1/5 Years	-/-	Grab	ND < 0.25	U
1,2-Dichloroproparie 1,2-Diphenylhydrazine/Azobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
1,3-Dichlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
1,3-Dichlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
1,4-Dichlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
1,4-Dichlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
2,4-Dichlorophenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
2,4-Dimethylphenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

	<u> </u>	DEDMIT : USE	DECENTIVE.	ı	12/06/2018 9:45:00 - 12/07/2018 10:05			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
2,6-Dinitrotoluene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
2-Chloroethyl vinyl ether	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
2-Chloronaphthalene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
2-Chlorophenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
2-Methyl-4,6-Dinitrophenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
2-Nitrophenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
3,3'-Dichlorobenzidine	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
4,4'-DDD	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.0038	U
4,4'-DDE	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.0028	U
4,4'-DDT	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.0038	U
4-Bromophenyl phenyl ether	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
4-Chloro-3-methylphenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
4-Chlorophenyl phenyl ether	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
4-Nitrophenol	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Acenaphthene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Acenaphthylene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Acrolein	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
Acrylonitrile	µg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
alpha-Endosulfan	µg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Anthracene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Aroclor 1016	µg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.24	UJ (S)
Aroclor 1221	µg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.24	UJ (S)
Aroclor 1221	µg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.24	UJ (S)
Aroclor 1232 Aroclor 1242	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.24	UJ (S)
Aroclor 1242 Aroclor 1248	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.24	UJ (S)
Aroclor 1254		-/-	1/Year	1/Quarter	-/-		ND < 0.24	UJ (S)
Aroclor 1260	μg/L	-/-	1/Year	1/Quarter	-/-	Composite Composite	ND < 0.24	UJ (S)
	μg/L			1/5 Years				U (S)
Benzene	μg/L	-/-	1/Year		-/-	Grab	ND < 0.25	
Benzidine	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR ANR	ANR
Benzo(a)anthracene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite		ANR
Benzo(a)pyrene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Benzo(b)fluoranthene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Benzo(g,h,i)Perylene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Benzo(k)fluoranthene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
beta-Endosulfan	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Bis (2-Chloroethoxy) Methane	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Bis (2-Chloroethyl) Ether	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Bis (2-Chloroisopropyl) Ether	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Bromoform	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.40	U
Bromomethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Butyl benzylphthalate	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Carbon Tetrachloride	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Chlordane	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.075	U
Chlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Chlorodibromomethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
Chloroethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.40	U
Chloroform	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Chloromethane (Methyl Chloride)	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Chromium	µg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Chrysene	µg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
cis-1,3-Dichloropropene	µg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Dibenz(a,h)anthracene	µg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Dichlorobromomethane		-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Dieldrin	μg/L	-/-	1/Year	1/Quarter	-/-	Composite	ND < 0.0019	U
Diethyl phthalate	μg/L	-/-		1/5 Years	-/-	•	ANR	ANR
	μg/L		1/Year			Composite		
Dimethyl phthalate	μg/L	-/-	1/Year	1/5 Years 1/5 Years	-/- -/-	Composite Composite	ANR ANR	ANR
Di-n-butyl phthalate	μg/L		1/Year	ļ				ANR
Di-n-octyl phthalate	μg/L	-/-	1/Year	1/5 Years	-/-	Crob	ANR ND < 0.25	ANR
Ethylbenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Fluoranthene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Fluorene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Hexachlorobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Hexachlorobutadiene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Hexachlorocyclopentadiene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Hexachloroethane	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Indeno(1,2,3-cd)pyrene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR

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						12/06/2018	9:45:00 - 12/07/	2018 10:05
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Isophorone	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
m,p-Xylenes	ug/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
Methylene chloride	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.88	U
Naphthalene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.40	U
Naphthalene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
Nitrobenzene	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
N-Nitroso-di-n-propylamine	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
N-Nitrosodiphenylamine	μg/L	-/-	1/Year	1/5 Years	-/-	Composite	ANR	ANR
o-Xylene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
Phenanthrene	µg/L	-/- -/-	1/Year	1/5 Years	-/- -/-	Composite	ANR ANR	ANR
Phenol	μg/L		1/Year	1/5 Years	-/- -/-	Composite	ANR	ANR
Pyrene Tetrachloroethene	μg/L μg/L	-/- -/-	1/Year 1/Year	1/5 Years 1/5 Years	-/- -/-	Composite Grab	ND < 0.25	ANR U
Toluene	1 - 1 -	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Toxaphene	μg/L μg/L	-/-	1/Year	1/Quarter	0.0003/-	Composite	ND < 0.23	U (\$)
trans-1,2-Dichloroethene	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U (\$)
trans-1,3-Dichloropropene	μg/L μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Trichlorofluoromethane	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
Vinyl chloride	μg/L μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ND < 0.25	U
Xylenes (Total)	μg/L	-/-	1/Year	1/5 Years	-/-	Grab	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLU		-/-	i/ i eai	1/5 Teals	-/-	Glab	ANIX	ANIX
1,1,2-Trichloro-1,2,2-trifluoroethane	1	-/-	1/Quarter	NA	-/-	Grab	ND < 0.50	U
1.2-Dichloro-1.1.2-trifluoroethane	μg/L μg/L	-/-	1/Year	NA NA	-/-	Grab	ANR	ANR
1,4-Dioxane	μg/L μg/L	-/-	1/Year	NA NA	-/-	Composite	ANR	ANR
Boron	mg/L	-/-	1/Year	NA NA	-/-	Composite	ANR	ANR
cis-1,2-Dichloroethene	µg/L	-/-	1/Year	NA NA	-/-	Grab	ND < 0.25	U
Cobalt	μg/L	-/-	1/Year	NA NA	-/-	Composite	ANR	ANR
Conductivity	µmhos/cm	-/-	1/Discharge	NA NA	-/-	Grab	140	
Cyclohexane	µg/L	-/-	1/Year	NA NA	-/-	Grab	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-/-	1/Year	NA NA	-/-	Grab	ANR	ANR
Dissolved Oxygen	mg/L	-/-	1/Discharge	NA	-/-	Grab	9.05	*
E. Coli	mpn/100mL	-/-	1/Year	1/Year	235/-	Grab	ANR	ANR
Gasoline Range Organics (GRO C4-C12)	mg/L	-/-	1/Year	NA	-/-	Grab	ANR	ANR
Hardness (as CaCO3)	mg/L	-/-	1/Year	1/Quarter	-/-	Composite	300	_
Monomethyl hydrazine	μg/L	-/-	1/Year	NA	-/-	Composite	ANR	ANR
Total Organic Carbon	mg/L	-/-	1/Year	NA	-/-	Composite	ANR	ANR
Turbidity	NTU	-/-	1/Discharge	NA	-/-	Composite	2500	
Vanadium	μg/L	-/-	1/Year	NA	-/-	Composite	ANR	ANR
ADDITIONAL POLLUTANTS ²⁾	•				•		•	•
Antimony, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Arsenic, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Barium, dissolved	mg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Beryllium, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Boron, dissolved	mg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Cadmium, dissolved	μg/L	-/-	Additional/Discharge	NA	-/-	Composite	ND < 0.25	U
Chromium, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Cobalt, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Copper, dissolved	μg/L	-/-	Additional/Discharge	NA	-/-	Composite	2.6	J+ (B)
Hardness, Dissolved (as CaCO3)	mg/L	-/-	Additional/Year	NA	-/-	Composite	54	
Human Bacteroides	CEs/100mL	-/-	Additional/Year	NA	-/-	Grab	ANR	ANR
Iron, dissolved	mg/L	-/-	Additional/Discharge ^(k)	NA	-/-	Composite	0.36	J(H)
Lead, dissolved	μg/L	-/-	Additional/Discharge	NA	-/-	Composite	ND < 0.50	U
Manganese, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Mercury, dissolved	μg/L	-/-	Additional/Discharge	NA	-/-	Composite	ND < 0.10	U
Nickel, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Selenium, dissolved	μg/L	-/-	Additional/Discharge	NA	-/-	Composite	ND < 0.50	U
Silver, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Thallium, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Vanadium, dissolved	μg/L	-/-	Additional/Year	NA	-/-	Composite	ANR	ANR
Zinc, Dissolved	μg/L	-/-	Additional/Discharge	NA	-/-	Composite	ND < 12	U

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2018 Sample Date 12/06/2018 9:45

ANALYTE	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	LAB MDL (μg/L)	LAB RL (µg/L)	LAB RESULT (µg/L)	LABORATORY/ VALIDATION QUALIFIER	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	TCDD EQUIVALENT (w/out DNQ Values) (µg/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	1/Year	3.0E-07	4.7E-05	6.0E-06	U (B)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	1/Year	2.2E-07	4.7E-05	1.3E-06	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	1/Year	2.7E-07	4.7E-05	ND	U	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	1/Year	2.1E-07	4.7E-05	1.6E-06	U (B)	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	1/Year	1.8E-07	4.7E-05	4.8E-07	J (DNQ)	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	1/Year	1.9E-07	4.7E-05	2.9E-07	U (B)	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	1/Year	1.6E-07	4.7E-05	2.8E-07	U (B)	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	1/Year	1.9E-07	4.7E-05	7.4E-07	U (B)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	1/Year	1.1E-07	4.7E-05	4.2E-07	U (B)	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	1/Year	2.4E-07	4.7E-05	4.3E-07	J (DNQ)	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	1/Year	2.3E-07	4.7E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	1/Year	1.1E-07	4.7E-05	2.4E-07	J (DNQ)	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	1/Year	2.6E-07	4.7E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	1/Year	3.0E-07	9.4E-06	3.4E-06	J (DNQ)	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	1/Year	7.5E-07	9.4E-06	ND	U	0.1	0.8	ND
OCDD	1/Discharge	1/Year	4.9E-07	9.4E-05	5.1E-05	U (B)	0.0001	0.01	ND
OCDF	1/Discharge	1/Year	3.4E-07	9.4E-05	4.8E-06	U (B)	0.0001	0.02	ND
TCDD TEQ w/out DN	Q Values ⁽⁴⁾								ND

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT(i) = 2.8E-08

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/07/20	12/07/2018 10:05 (Composite)		
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER	
NON-CONVENTIONAL POLLUTANTS									
Gross Alpha	pCi/L	15/-	1/Discharge	NA	-/-	22.3 ± 5.45	3.52	J- (*III)	
Gross Beta	pCi/L	50/-	1/Discharge	NA	-/-	16.7 ± 2.89	2.15		
Combined Radium-226 & Radium-228	pCi/L	5.0/-	1/Discharge	NA	-/-	1.36 ± 0.707	NM	U (B)	
Strontium-90	pCi/L	8.0/-	1/Discharge	NA	-/-	0.453 ± 0.804	1.36	U	
Tritium	pCi/L	20,000/-	1/Discharge	NA	-/-	-53.2 ± 166	302	U	
ADDITIONAL POLLUTANTS									
Cesium-137	pCi/L	200/-	1/Discharge	NA	-/-	3.14 ± 7.71	13.3	U	
Uranium	pCi/L	20/-	1/Discharge	NA	-/-	1.25 ± 1.30	1.61	U	
ADDITIONAL POLLUTANTS WITHOUT LIMITS					•				
Potassium-40	pCi/L	-/-	1/Discharge	NA	-/-	83.1 ± 91.9	139	U	

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/2018 09:45 - 12/07/2018 10:05 (Grab & Composite)			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Flow**	MGD	117.83/-	1/Discharge	Meas	0.003577	*	
CONVENTIONAL POLLUTANTS		•					
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	LBS/DAY	29,481/-	1/Discharge	Composite	0.11		
Oil & Grease	LBS/DAY	14,741/-	1/Discharge	Grab	ND	U	
Total Suspended Solids [#]	LBS/DAY	44.222/-	1/Discharge	Composite	10 ^(c)		
PRIORITY POLLUTANTS	250/5/11	, ,	1, 210011a. go	Composito	10	I	
1.1-Dichloroethene	LBS/DAY	5.9/-	1/Discharge	Grab	ND	U	
1.2-Dichloroethane	LBS/DAY	0.49/-	1/Discharge	Grab	ND	Ü	
2,4,6-Trichlorophenol	LBS/DAY	12.8/-	1/Discharge	Composite	ND	Ü	
2.4-Dinitrotoluene	LBS/DAY	17.7/-	1/Discharge	Composite	ND	Ü	
alpha-BHC	LBS/DAY	0.03/-	1/Discharge	Composite	ND ND	U	
Antimony	LBS/DAY	5.9/-	1/Discharge	Composite	ANR	ANR	
Arsenic	LBS/DAY	9.83/-	1/Year	Composite	ANR	ANR	
Beryllium	LBS/DAY	3.93/-	1/Year	Composite	ANR	ANR	
Bis (2-Ethylhexyl) Phthalate	LBS/DAY	3.93/-	1/Discharge	Composite	ND	U	
Cadmium	LBS/DAY	(3.93) 3.05/-	1/Discharge	Composite	0.000048 ^(b)		
Chromium VI	LBS/DAY	15.72/-	1/Year	Composite	ANR	ANR	
Copper	LBS/DAY	13.76/-	1/Discharge	Composite	0.0016	ANIX	
Cyanide	LBS/DAY	8.35/-	1/Discharge	Composite	0.0010 ND	UJ (H)	
Lead	LBS/DAY	5.11/-	1/Discharge	Composite	0.0026	03 (11)	
Mercury	LBS/DAY	0.1/-	1/Discharge	Composite	ND	U	
Nickel	LBS/DAY	92.4/-	1/Year	Composite	ANR	ANR	
N-Nitrosodimethylamine	LBS/DAY	15.72/-	1/Discharge	Composite	ND	U	
Pentachlorophenol	LBS/DAY	16.22/-	1/Discharge	Composite	ND ND	U	
Selenium	LBS/DAY	(4.91) 8.06/-	1/Discharge	Composite	0.00033 ^(f)	J- (Q)	
Silver	LBS/DAY	4.03/-	1/Discharge	Composite	0.00033·/ ANR	ANR	
TCDD TEQ NoDNQ ⁽⁴⁾	LBS/DAY	2.75E-08	1/Discharge	Composite	ND ND	ANK	
Thallium	LBS/DAY	1.97/-	1/Discharge	Composite	ANR	ANR	
Trichloroethene	LBS/DAY	4.91/-	1/Tear 1/Discharge	Grab	ND	U	
	LBS/DAY	4.91/-			0.013		
Zinc PONTENTIONAL BOLLUTANTO	LD5/DAY	117/-	1/Discharge	Composite	0.013	-	
NON-CONVENTIONAL POLLUTANTS	1.00/04/	0.005.07	4/5: 1		2 22722	1	
Ammonia – N	LBS/DAY	9,925.3/-	1/Discharge	Composite	0.00788		
Barium	LBS/DAY	983/-	1/Year	Composite	ANR	ANR	
Chloride	LBS/DAY	147,405/-	1/Discharge	Composite	0.081		
Chlorine, Total Residual	LBS/DAY	98.3/-	1/Year	Grab	ANR	ANR	
Detergents (as MBAS)	LBS/DAY	491.4/-	1/Discharge	Composite	ND	UJ (Q, Q1)	
Fluoride	LBS/DAY	1,572.3/-	1/Year	Composite	ANR	ANR	
Iron	LBS/DAY	295/-	1/Discharge ^(k)	Composite	2.9		
Manganese	LBS/DAY	49.1/-	1/Year	Composite	ANR	ANR	
Nitrate - N	LBS/DAY	7,862/-	1/Discharge	Composite	0.042		
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862/-	1/Discharge	Composite	0.042		
Nitrite - N	LBS/DAY	983/-	1/Discharge	Composite	0.00075	J (DNQ)	
Perchlorate	LBS/DAY	5.9/-	1/Discharge	Composite	ND	U	
Sulfate	LBS/DAY	294,810/-	1/Discharge	Composite	0.23		
Total Dissolved Solids	LBS/DAY	933,567/-	1/Discharge	Composite	7.5		

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/201	18 9:15 - 12/07/2	018 11:05
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	7.21/-	1/Discharge	Meas	0.011839	*
CONVENTIONAL POLLUTANTS	<u>.</u>					•
Oil & Grease	mg/L	15/-	1/Discharge	Grab	ND < 1.5	U
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	Grab	6.54	*
PRIORITY POLLUTANTS	<u>.</u>					-
Antimony	μg/L	6.0/-	1/Discharge	Composite	0.86	J (DNQ)
Cadmium	μg/L	(4.03)3.1/-	1/Discharge	Composite	0.90 ^(b)	J (DNQ)
Copper	μg/L	14/-	1/Discharge	Composite	15	`
Cyanide	μg/L	9.5/-	1/Discharge	Composite	15	
Lead	μg/L	5.2/-	1/Discharge	Composite	54	
Mercury	μg/L	0.13/-	1/Discharge	Composite	ND < 0.10	U
Nickel	μg/L	86/-	1/Discharge	Composite	18	
Selenium	μg/L	5/-	1/Discharge	Composite	2.1	
Thallium	μg/L	2.0/-	1/Discharge	Composite	ND < 0.50	U
Zinc	µg/L	120/-	1/Discharge	Composite	120	
NON-CONVENTIONAL POLLUTANTS	ı rə'-			poone		1
Ammonia - N	mg/L	10.1/-	1/Discharge	Composite	0.508	
Boron	mg/L	1.0/-	1/Year	Composite	0.081	
Chloride	mg/L	150/-	1/Discharge	Composite	2.3	
Chioride	Pass or %		1st & 2nd rain	'		-
Chronic Toxicity	Effect<50	Pass or % Effect<50	event/Year	Composite	Pass, -28.28	
Fluoride	mg/L	1.6/-	1/Year	Composite	0.30	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	8/-	1/Discharge	Composite	1.4	
Nitrate - N	mg/L	8/-	1/Discharge	Composite	1.4	
Nitrite - N	mg/L	1/-	1/Discharge	Composite	ND < 0.025	U
Perchlorate	µg/L	6.0/-	1/Discharge	Composite	ND < 0.95	Ü
Sulfate	mg/L	300/-	1/Discharge	Composite	5.1	
Temperature (Field)	deg F	86/-	1/Discharge	Grab	45.2	*
Total Dissolved Solids	mg/L	950/-	1/Discharge	Composite	120	
	mg/L	330/-	1/Discharge	Composite	120	
REMAINING PRIORITY POLLUTANTS	ug/l	-/-	1/Year	Crob	ND < 0.25	111/*11\
1,1,1-Trichloroethane	μg/L	-/-	1/Year	Grab Grab	ND < 0.25	UJ (*II)
1,1,2,2-Tetrachloroethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II) UJ (*II)
1,1,2-Trichloroethane	μg/L	-/- -/-				` '
1,1-Dichloroethane	μg/L	-/- -/-	1/Year 1/Year	Grab Grab	ND < 0.25 ND < 0.25	UJ (*II)
1,1-Dichloroethene	μg/L	-/- -/-	1/Year 1/Year			UJ (*II)
1,2,4-Trichlorobenzene	μg/L	-/- -/-	·	Composite Composite	ND < 0.200 ND < 0.200	U
1,2-Dichlorobenzene	μg/L	·	1/Year			
1,2-Dichlorobenzene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
1,2-Dichloroethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
1,2-Dichloropropane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
1,2-Diphenylhydrazine/Azobenzene	μg/L	-/-	1/Year	Composite	ND < 0.200	U
1,3-Dichlorobenzene	μg/L	-/-	1/Year	Composite	ND < 0.200	U
1,3-Dichlorobenzene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
1,4-Dichlorobenzene	μg/L	-/-	1/Year	Composite	ND < 0.200	U
1,4-Dichlorobenzene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
2,4,6-Trichlorophenol	μg/L	-/-	1/Year	Composite	ND < 0.100	U
2,4-Dichlorophenol	μg/L	-/-	1/Year	Composite	ND < 0.200	U
2,4-Dimethylphenol	μg/L	-/-	1/Year	Composite	ND < 0.500	U
2,4-Dinitrophenol	μg/L	-/-	1/Year	Composite	ND < 1.00	U
2,4-Dinitrotoluene	μg/L	-/-	1/Year	Composite	ND < 2.00	U
2,6-Dinitrotoluene	μg/L	-/-	1/Year	Composite	ND < 2.00	U
2-Chloroethylvinylether	μg/L	-/-	1/Year	Grab	ND < 1.0	UJ (*II)
2-Chloronaphthalene	μg/L	-/-	1/Year	Composite	ND < 0.100	U
2-Chlorophenol	μg/L	-/-	1/Year	Composite	ND < 0.100	U
2-Methyl-4,6-Dinitrophenol	μg/L	-/-	1/Year	Composite	ND < 1.00	U
2-Nitrophenol	μg/L	-/-	1/Year	Composite	ND < 0.200	U

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/2018 9:15 - 12/07/2018 11:05			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
3,3'-Dichlorobenzidine	μg/L	-/-	1/Year	Composite	ND < 1.00	U	
4,4'-DDD	μg/L	-/-	1/Year	Composite	ND < 0.0037	U	
4,4'-DDE	μg/L	-/-	1/Year	Composite	ND < 0.0028	U	
4,4'-DDT	μg/L	-/-	1/Year	Composite	ND < 0.0037	U	
4-Bromophenylphenylether	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
4-Chloro-3-methylphenol	μg/L	-/-	1/Year	Composite	ND < 0.200	U	
4-Chlorophenylphenylether	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
4-Nitrophenol	μg/L	-/-	1/Year	Composite	ND < 2.00	U	
Acenaphthene	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
Acenaphthylene	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
Acrolein	μg/L	-/-	1/Year	Grab	ND < 2.5	UJ (*II)	
Acrylonitrile	μg/L	-/-	1/Year	Grab	ND < 1.0	UJ (*II)	
Aldrin	µg/L	-/-	1/Year	Composite	ND < 0.0014	U	
alpha-BHC	µg/L	-/-	1/Year	Composite	ND < 0.0023	U	
Anthracene	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
Aroclor 1016	μg/L	-/-	1/Year	Composite	ND < 0.23	U	
Aroclor 1221	μg/L	-/-	1/Year	Composite	ND < 0.23	U	
Aroclor 1221 Aroclor 1232		-/-	1/Year	Composite	ND < 0.23	U	
	μg/L	-/-				U	
Aroclor 1242	µg/L	-/- -/-	1/Year	Composite	ND < 0.23		
Aroclor 1248	µg/L		1/Year	Composite	ND < 0.23	U	
Aroclor 1254	μg/L	-/-	1/Year	Composite	ND < 0.23	U	
Aroclor 1260	μg/L	-/-	1/Year	Composite	ND < 0.23	U	
Arsenic	μg/L	-/-	1/Year	Composite	13	J+ (B)	
Asbestos	MFL	-/-	1/Year	Composite	ND < 5	UJ (H)	
Benzene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Benzidine	μg/L	-/-	1/Year	Composite	ND < 5.00	U	
Benzo(a)anthracene	μg/L	-/-	1/Year	Composite	ND < 1.00	U	
Benzo(a)pyrene	μg/L	-/-	1/Year	Composite	ND < 0.200	U	
Benzo(b)fluoranthene	μg/L	-/-	1/Year	Composite	ND < 0.300	U	
Benzo(g,h,i)Perylene	μg/L	-/-	1/Year	Composite	ND < 1.00	U	
Benzo(k)fluoranthene	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
Beryllium	μg/L	-/-	1/Year	Composite	1.2	J (DNQ)	
beta-BHC	μg/L	-/-	1/Year	Composite	ND < 0.0037	U	
Bis (2-Chloroethoxy) Methane	μg/L	-/-	1/Year	Composite	ND < 0.200	U	
Bis (2-Chloroethyl) Ether	μg/L	-/-	1/Year	Composite	ND < 0.0500	U	
Bis (2-Chloroisopropyl) Ether	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
Bis (2-Ethylhexyl) Phthalate	μg/L	-/-	1/Year	Composite	ND < 2.00	U	
Bromodichloromethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Bromoform	μg/L	-/-	1/Year	Grab	ND < 0.40	UJ (*II)	
Bromomethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Butylbenzylphthalate	μg/L	-/-	1/Year	Composite	ND < 2.00	Ú	
Carbon Tetrachloride	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Chlordane	µg/L	-/-	1/Year	Composite	ND < 0.075	U	
Chlorobenzene	µg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Chloroethane	µg/L	-/-	1/Year	Grab	ND < 0.40	UJ (*II)	
Chloroform	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Chloromethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Chromium	μg/L	-/-	1/Year	Composite	10		
Chromium VI	μg/L	-/-	1/Year	Composite	ND < 0.25	U	
	μg/L	-/-	1/Year	Composite	ND < 0.100	U	
Chrysene		-/-	1/Year	Grab	ND < 0.100	UJ (*II)	
cis-1,3-Dichloropropene	μg/L	-/- -/-		Composite	ND < 0.25	UJ (*II)	
delta-BHC	μg/L		1/Year				
Dibenzo(a,h)anthracene	μg/L	-/-	1/Year	Crob	ND < 0.200	U	
Dibromochloromethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)	
Dieldrin	μg/L	-/-	1/Year	Composite	ND < 0.0019	U	
Diethylphthalate	μg/L	-/-	1/Year	Composite	ND < 0.200	U	

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/20	018 11:05	
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Dimethylphthalate	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Di-n-butylphthalate	μg/L	-/-	1/Year	Composite	ND < 0.500	U
Di-n-octylphthalate	μg/L	-/-	1/Year	Composite	ND < 1.00	U
Endosulfan I	μg/L	-/-	1/Year	Composite	ND < 0.0028	U
Endosulfan II	μg/L	-/-	1/Year	Composite	ND < 0.0019	U
Endosulfan Sulfate	μg/L	-/-	1/Year	Composite	ND < 0.0028	U
Endrin	μg/L	-/-	1/Year	Composite	ND < 0.0019	U
Endrin Aldehyde	μg/L	-/-	1/Year	Composite	ND < 0.0019	U
Ethylbenzene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
Fluoranthene	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Fluorene	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Heptachlor	μg/L	-/-	1/Year	Composite	ND < 0.0028	U
Heptachlor Epoxide	μg/L	-/-	1/Year	Composite	ND < 0.0023	U
Hexachlorobenzene	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Hexachlorobutadiene	μg/L	-/-	1/Year	Composite	ND < 0.500	U
Hexachlorocyclopentadiene	μg/L	-/-	1/Year	Composite	ND < 2.00	U
Hexachloroethane	μg/L	-/-	1/Year	Composite	ND < 0.500	Ü
Indeno(1,2,3-cd)pyrene	μg/L	-/-	1/Year	Composite	ND < 0.400	Ü
Isophorone	μg/L	-/-	1/Year	Composite	ND < 0.200	Ü
Lindane (gamma-BHC)	μg/L	-/-	1/Year	Composite	ND < 0.0028	Ü
10 /		-/-	1/Year	Grab	ND < 0.88	UJ (*II)
Methylene chloride	μg/L	-/-	1/Year	Composite	0.104	J (DNQ)
Naphthalene	μg/L	-/-	1/Year	Grab	ND < 0.40	UJ (*II)
Naphthalene	μg/L	-/- -/-	1/Year	Composite	ND < 0.40	U
Nitrobenzene	μg/L	-/- -/-	1/Year	Composite		U
N-Nitrosodimethylamine	μg/L	-/-		- '	ND < 0.300	U
N-Nitroso-di-n-propylamine	μg/L	-/- -/-	1/Year	Composite	ND < 0.200	U
N-Nitrosodiphenylamine	μg/L	· ·	1/Year	Composite	ND < 0.200	
Pentachlorophenol	μg/L	-/-	1/Year	Composite	ND < 1.00	U
Phenanthrene	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Phenol	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Pyrene	μg/L	-/-	1/Year	Composite	ND < 0.100	U
Tetrachloroethene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
Toluene	μg/L	-/-	1/Year	Grab	0.27	J (DNQ, *II)
Toxaphene	μg/L	-/-	1/Year	Composite	ND < 0.23	U
trans-1,2-Dichloroethene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
trans-1,3-Dichloropropene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
Trichloroethene	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
Trichlorofluoromethane	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
Vinyl chloride	μg/L	-/-	1/Year	Grab	ND < 0.25	UJ (*II)
Xylenes (Total)	μg/L	-/-	1/Year	Grab	ND < 0.50	UJ (*II)
EFFLUENT MONITORING (NO LIMITATIONS) POLLU	TANTS					
Aluminum	μg/L	-/-	1/Year	Composite	9100	
Chlorpyrifos	μg/L	-/-	1/Year	Composite	ND < 0.034	UJ (S)
Diazinon	μg/L	-/-	1/Year	Composite	ND < 0.026	R (H)
E. Coli	MPN/100mL	-/-	1/Year	Grab	8500	J (H)
Hardness (as CaCO3)	mg/L	-/-	1/Year	Composite	180	
Iron	mg/L	-/-	1/Year	Composite	9.5	
Silver	µg/L	-/-	1/Discharge	Composite	ND < 0.50	U
Total Suspended Solids	mg/L	-/-	1/Year	Composite	750	
Vanadium	μg/L	-/-	1/Year	Composite	22	
	⊬9/ L	ı	1, 1 0 01	Composito		1
ADDITIONAL POLLUTANTS ⁽²⁾	uc/I	-/-	Additional/Vaar	Composito	60	I (H DNO)
Aluminum, dissolved	μg/L	-/-	Additional/Year	Composite	60	J (H,DNQ)
Antimony, dissolved	μg/L		Additional/Discharge	Composite	0.79	J (H,DNQ)
Arsenic, dissolved	μg/L	-/-	Additional/Year	Composite	ND < 8.9	UJ (H)
Beryllium, dissolved	μg/L	-/-	Additional/Year	Composite	ND < 1.0	UJ (H)
Boron, dissolved	mg/L	-/-	Additional/Year	Composite	0.049	J (H,DNQ)

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/2018 9:15 - 12/07/2018 11:05			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Cadmium, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.25	UJ (H)	
Chromium, dissolved	μg/L	-/-	Additional/Year	Composite	ND < 2.5	UJ (H)	
cis-1,2-Dichloroethene	μg/L	-/-	Additional/Year	Grab	ND < 0.25	UJ (*II)	
Copper, dissolved	μg/L	-/-	Additional/Discharge	Composite	1.5	J (H, DNQ)	
Hardness, Dissolved (as CaCO3)	mg/L	-/-	Additional/Year	Composite	69		
Human Bacteroides	CEs/100mL	-/-	Additional/Year	Grab	ND	U*	
Iron, dissolved	mg/L	-/-	Additional/Year	Composite	0.078	J (H,DNQ)	
Lead, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.50	UJ (H)	
Mercury, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.10	UJ (H)	
Nickel, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 5.0	UJ (H)	
Selenium, dissolved	μg/L	-/-	Additional/Discharge	Composite	0.87	J (H,DNQ)	
Silver, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.50	UJ (H)	
Thallium, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.50	UJ (H)	
Turbidity	NTU	-/-	Additional	Composite	890	*	
Vanadium, dissolved	μg/L	-/-	Additional/Year	Composite	ND < 5.0	UJ (H)	
Zinc, Dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 12	UJ (H)	

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

Sample Type: Composite
Sample Date: December 07, 2018

ANALYTE	OUTFALL SAMPLE FREQUENCY	LAB MDL (μg/L)	LAB RL (µg/L)	LAB RESULT (µg/L)	LABORATORY/ VALIDATION QUALIFIER	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	TCDD EQUIVALENT (w/out DNQ Values) (μg/L)			
1,2,3,4,6,7,8-HpCDD	1/Discharge	3.70E-07	4.80E-05	3.00E-05	U (B)	0.01	0.05	ND			
1,2,3,4,6,7,8-HpCDF	1/Discharge	3.20E-07	4.80E-05	8.10E-06	U (B)	0.01	0.01	ND			
1,2,3,4,7,8,9-HpCDF	1/Discharge	2.90E-07	4.80E-05	3.90E-06	U (B)	0.01	0.4	ND			
1,2,3,4,7,8-HxCDD	1/Discharge	2.50E-07	4.80E-05	4.60E-06	U (B)	0.1	0.3	ND			
1,2,3,4,7,8-HxCDF	1/Discharge	3.00E-07	4.80E-05	4.00E-06	J (DNQ)	0.1	0.08	ND			
1,2,3,6,7,8-HxCDD	1/Discharge	2.30E-07	4.80E-05	3.80E-06	U (B)	0.1	0.1	ND			
1,2,3,6,7,8-HxCDF	1/Discharge	2.50E-07	4.80E-05	3.20E-06	U (B)	0.1	0.2	ND			
1,2,3,7,8,9-HxCDD	1/Discharge	2.20E-07	4.80E-05	5.30E-06	U (B)	0.1	0.1	ND			
1,2,3,7,8,9-HxCDF	1/Discharge	1.70E-07	4.80E-05	3.40E-06	U (B)	0.1	0.6	ND			
1,2,3,7,8-PeCDD	1/Discharge	2.60E-07	4.80E-05	2.80E-06	J (DNQ)	1.0	0.9	ND			
1,2,3,7,8-PeCDF	1/Discharge	2.10E-07	4.80E-05	2.70E-06	J (DNQ)	0.05	0.2	ND			
2,3,4,6,7,8-HxCDF	1/Discharge	1.70E-07	4.80E-05	3.10E-06	J (DNQ)	0.1	0.7	ND			
2,3,4,7,8-PeCDF	1/Discharge	2.60E-07	4.80E-05	2.80E-06	J (DNQ)	0.5	1.6	ND			
2,3,7,8-TCDD	1/Discharge	2.80E-07	9.50E-05	1.40E-06	UJ (*III)	1.0	1.0	ND			
2,3,7,8-TCDF	1/Discharge	6.10E-07	9.50E-06	1.90E-06	U (B)	0.1	0.8	ND			
OCDD	1/Discharge	5.80E-07	9.50E-05	2.40E-04	U (B)	0.0001	0.01	ND			
OCDF	1/Discharge	3.50E-07	9.50E-05	2.10E-05	U (B)	0.0001	0.02	ND			
_							•	ND			
TCDD TEQ w/out DN	TCDD TEQ w/out DNQ Values ⁽⁴⁾										

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.8E-08

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/0	12/07/18 11:05 (Composite)			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER		
NON-CONVENTIONAL POLLUTANTS								
Gross Alpha	pCi/L	15/-	1/Discharge	14.8 +/-3.81	3.08	J- (*III)		
Gross Beta	pCi/L	50/-	1/Discharge	15.5 +/-2.46	1.71	-		
Total Combined Radium-226 & Radium 228	pCi/L	5.0/-	1/Discharge	1.01 +/-0.699	NM	U (B)		
Strontium-90	pCi/L	8.0/-	1/Discharge	0.109 +/-0.251	0.434	U		
Tritium	pCi/L	20,000/-	1/Discharge	-220 +/-200	389	U		
ADDITIONAL POLLUTANTS								
Cesium-137	pCi/L	200/-	1/Discharge	0.483 +/-10.6	18.7	U		
Total Uranium	pCi/L	20/-	1/Discharge	1.33 +/-0.884	0.833	U (B)		
ADDITIONAL POLLUTANTS WITHOUT LIMITS	_	_				_		
Potassium-40	pCi/L	-/-	1/Discharge	-15.1 +/-139	186	U		

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

					8 09:15 - 12/07/2 Grab & Composi	
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	7.21/-	1/Discharge	Meas	0.011839	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	902/-	1/Discharge	Grab	ND	U
PRIORITY POLLUTANTS						
Antimony	LBS/DAY	0.36/-	1/Discharge	Composite	0.000085	J (DNQ)
Cadmium	LBS/DAY	(0.24)0.19/-	1/Discharge	Composite	0.000090 ^(b)	J (DNQ)
Copper	LBS/DAY	0.84/-	1/Discharge	Composite	0.0015	
Cyanide	LBS/DAY	0.57/-	1/Discharge	Composite	0.0015	
Lead	LBS/DAY	0.31/-	1/Discharge	Composite	0.0053	
Mercury	LBS/DAY	0.008/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	5.2/-	1/Discharge	Composite	0.0018	
Selenium	LBS/DAY	0.3/-	1/Discharge	Composite	0.00021	
TCDD TEQ_NoDNQ ⁽⁴⁾	LBS/DAY	1.7E-09/-	1/Discharge	Composite	ND	
Thallium	LBS/DAY	0.12/-	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	7.22/-	1/Discharge	Composite	0.012	
NON-CONVENTIONAL POLLUTANTS						
Ammonia-N	LBS/DAY	607.3/-	1/Discharge	Composite	0.0502	
Boron	LBS/DAY	60/-	1/Year	Composite	0.0080	
Chloride	LBS/DAY	9,020/-	1/Discharge	Composite	0.23	
Fluoride	LBS/DAY	96.2/-	1/Year	Composite	0.030	J (DNQ)
Nitrate-N	LBS/DAY	481/-	1/Discharge	Composite	0.14	
Nitrite-N	LBS/DAY	60/-	1/Discharge	Composite	ND	U
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	481/-	1/Discharge	Composite	0.14	
Perchlorate	LBS/DAY	0.36/-	1/Discharge	Composite	ND	U
Sulfate	LBS/DAY	18,039/-	1/Discharge	Composite	0.50	
Total Dissolved Solids	LBS/DAY	57,124/-	1/Discharge	Composite	12	

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

MAILYTE					12/06/201	18 10:00 - 12/07/2	2018 09:00
2004 2004	ANALYTE	UNITS				RESULT	
18	Flow**	MGD	64.33/-	1/Discharge	Meas	0.158274	*
Miles Mile	CONVENTIONAL POLLUTANTS			•		•	
Miller M	Oil & Grease	mg/L	15/-	1/Discharge	Grab	1.6	J (DNQ)
Animony	pH (Field)		6.5-8.5/-	•	Grab	7.97	*
	PRIORITY POLLUTANTS			Ü			
Page	Antimony	μg/L	6.0/-	1/Discharge	Composite	ND < 0.50	U
Deper	Cadmium		4.0/-	1/Discharge	Composite	ND < 0.25	U
younde	Copper		13/-	1/Discharge	Composite	4.5	
Hercury Her	Cyanide	μg/L	9.5/-	1/Discharge	Composite	ND < 2.5	U
Mercury Marcury Mar	Lead		5.2/-	1/Discharge	•	2.5	
	Mercury		0.13/-	1/Discharge	Composite	ND < 0.10	U
Page	Nickel		86/-	•	Composite	ND < 5.0	U
2006 2006	Thallium			•	•		U
Main	Zinc			•	•		
Second mg/L 1.0-		F-3' =	0/				
Pass or Fail and % Effect Pass or % Effect 150 151 & 2 2.5		ma/l	1.0/-	1/Vear	Composite	AND	AND
Pass or Fail and % Effect Pass or % Effect P				· ·			1
Pass of % Effect Pass of % Effect Sp	Official	- J	100/-		Composite	2.5	
Mitrate Nitrice as Nitrogen (N) mg/L 10/- 1/Discharge Composite 0.96	Chronic Toxicity		Pass or % Effect <50	**	Composite	Pass, 10.02	
Perchicate	Fluoride	mg/L	1.6/-	1/Year	Composite	ANR	ANR
Sulfate	Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1/Discharge	Composite	0.96	
Femperature (Field) deg F 86/- 11/Discharge Grab 47.2 - 1/Total Dissolved Solids mg/L 850/- 17/Discharge Composite 46 - 1/Total Discharge Composite 47.2 - 1/Total Discharge Composite ANR ANR	Perchlorate	μg/L	6.0/-	1/Semiannual	Composite	ND < 0.95	U
Total Dissolved Solids mg/L 850/- 1/Discharge Composite 46	Sulfate	mg/L	250/-	1/Discharge	Composite	2.7	
1,1-1-Trichloroethane	Temperature (Field)	deg F	86/-	1/Discharge	Grab	47.2	*
1,1-Trichloroethane	Total Dissolved Solids	mg/L	850/-	1/Discharge	Composite	46	
1/1/22-Tetrachloroethane ру. 1/1/22-Tetrachloroethane ру.	REMAINING PRIORITY POLLUTANTS						
1/1/22-Tetrachloroethane ру. 1/1/22-Tetrachloroethane ру.	1.1.1-Trichloroethane	ua/L	-/-	1/Year	Grab	ANR	ANR
1,1-2-Trichloroethane	, ,			·			
1,1-Dichloroethane	1.1.2-Trichloroethane						
1,1-Dichloroethene	7.7						
μg/L -/- 1/Year Composite ANR ANR ANR 2.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR 2.Polichlorobenzene μg/L -/- 1/Year Composite ANR ANR ANR 2.Polichlorobenzene μg/L -/- 1/Year Composite ANR ANR ANR 2.Polichlorobenane μg/L -/- 1/Year Grab ANR ANR ANR 2.Polichloropenane μg/L -/- 1/Year Grab ANR ANR ANR 2.Polichloropenane μg/L -/- 1/Year Grab ANR ANR ANR 2.Polichloropenane μg/L -/- 1/Year Grab ANR ANR ANR ANR 2.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR ANR 3.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR 3.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR 4.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR 4.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR 4.Polichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR 4.Polichlorophenol μg/L -/- 1/Year Composite ANR ANR ANR 4.Polichlorophenol μg/L -/- 1/Year Composite ANR ANR ANR 4.Polichlorophenol μg/L -/- 1/Year Composite ANR	,						
1/Year Grab ANR	,						
1/2-Dichlorobenzene	7.7						
_2-Dichloroethane							
2-Dichloropropane					•		
1,2-Diphenylhydrazine/Azobenzene				·			
3-Dichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR (3-Dichlorobenzene μg/L -/- 1/Year Composite ANR ANR ANR (4-Dichlorobenzene μg/L -/- 1/Year Grab ANR ANR ANR ANR (4-Dichlorobenzene μg/L -/- 1/Year Grab ANR ANR	7			·	_		
,3-Dichlorobenzene	7 1 3 3				•		
1,4-Dichlorobenzene				·			
1,4-Dichlorobenzene							
μg/L -/- 1/Year Composite ANR ANR 2,4-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR 2,4-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR 2,4-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR 2,6-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR 2,C-Chloroethyl vinyl ether μg/L -/- 1/Year Grab ANR ANR 2,C-Chloronaphthalene μg/L -/- 1/Year Composite ANR ANR 2,C-Chlorophenol μg/L -/- 1/Year Composite ANR ANR 3,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -	.,						
Pg/L -/- 1/Year Composite ANR ANR				·	•		
2,4-Dimethylphenol µg/L -/- 1/Year Composite ANR ANR 2,4-Dinitrophenol µg/L -/- 1/Year Composite ANR ANR 2,4-Dinitrotoluene µg/L -/- 1/Year Composite ANR ANR 2,6-Dinitrotoluene µg/L -/- 1/Year Composite ANR ANR 2,0-Chlorophyl ether µg/L -/- 1/Year Composite ANR ANR 2,0-Chlorophenol µg/L -/- 1/Year Composite ANR ANR 2,Nitrophenol µg/L -/- 1/Year Composite	7.7-				•		
2,4-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR ANR 2,4-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR ANR 2,4-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR ANR ANR 2,4-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR ANR 2,4-Dinitrotoluene μg/L -/- 1/Year Grab ANR ANR ANR 2,4-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR ANR 2,4-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR 2,3-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR ANR 3,3-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4-DDD μg/L -/- 1/Year Composite ANR ANR 4,4-DDD μg/L -/- 1/Year Composite ANR ANR 4,4-DDE μg/L -/- 1/Year Composite ANR ANR 4,4-DDE μg/L -/- 1/Year Composite ANR ANR ANR 4,4-DDE μg/L -/-					•		
2,4-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR 2,6-Dinitrotoluene μg/L -/- 1/Year Composite ANR ANR 2-Chloroethyl vinyl ether μg/L -/- 1/Year Grab ANR ANR 2-Chloronaphthalene μg/L -/- 1/Year Composite ANR ANR 2-Chlorophenol μg/L -/- 1/Year Composite ANR ANR 2-Methyl-4,6-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR 2-Nitrophenol μg/L -/- 1/Year Composite ANR ANR 3,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -/- 1/Year Composite ANR ANR							
2,6-Dinitrotoluene µg/L -/- 1/Year Composite ANR ANR 2-Chloroethyl vinyl ether µg/L -/- 1/Year Grab ANR ANR 2-Chloronaphthalene µg/L -/- 1/Year Composite ANR ANR 2-Chlorophenol µg/L -/- 1/Year Composite ANR ANR 2-Methyl-4,6-Dinitrophenol µg/L -/- 1/Year Composite ANR ANR 2-Nitrophenol µg/L -/- 1/Year Composite ANR ANR 3,3'-Dichlorobenzidine µg/L -/- 1/Year Composite ANR ANR 4,4'-DDD µg/L -/- 1/Year Composite ANR ANR 4,4'-DDE µg/L -/- 1/Year Composite ANR ANR					•		
2-Chloroethyl vinyl ether μg/L -/- 1/Year Grab ANR ANR ANR 2-Chloronaphthalene μg/L -/- 1/Year Composite ANR ANR ANR 2-Chlorophenol μg/L -/- 1/Year Composite ANR ANR ANR 2-Chlorophenol μg/L -/- 1/Year Composite ANR ANR ANR 2-Nitrophenol μg/L -/- 1/Year Composite ANR ANR ANR 2-Nitrophenol μg/L -/- 1/Year Composite ANR ANR ANR 3-3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR ANR 4-DDD μg/L -/- 1/Year Composite ANR ANR ANR ANR 4-DDE					•		
2-Chloronaphthalene μg/L -/- 1/Year Composite ANR ANR 2-Chlorophenol μg/L -/- 1/Year Composite ANR ANR 2-Methyl-4,6-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR 2-Nitrophenol μg/L -/- 1/Year Composite ANR ANR 3,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -/- 1/Year Composite ANR ANR					•		
2-Chlorophenol μg/L -/- 1/Year Composite ANR ANR 2-Methyl-4,6-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR 2-Nitrophenol μg/L -/- 1/Year Composite ANR ANR 3,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -/- 1/Year Composite ANR AN							
2-Methyl-4,6-Dinitrophenol μg/L -/- 1/Year Composite ANR ANR 2-Nitrophenol μg/L -/- 1/Year Composite ANR ANR 3,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -/- 1/Year Composite ANR ANR					•		
P-Nitrophenol μg/L -/- 1/Year Composite ANR ANR 8,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -/- 1/Year Composite ANR ANR	2-Chlorophenol				•		
β,3'-Dichlorobenzidine μg/L -/- 1/Year Composite ANR ANR 4,4'-DDD μg/L -/- 1/Year Composite ANR ANR 4,4'-DDE μg/L -/- 1/Year Composite ANR ANR ANR ANR ANR ANR ANR					•		
I,4'-DDD μg/L -/- 1/Year Composite ANR ANR I,4'-DDE μg/L -/- 1/Year Composite ANR ANR	2-Nitrophenol				•		
1,4'-DDE μg/L -/- 1/Year Composite ANR ANR	3,3'-Dichlorobenzidine				•		
	4,4'-DDD				•		
μg/L -/- 1/Year Composite ANR ANR	4,4'-DDE						
	4,4'-DDT	μg/L	-/-	1/Year	Composite	ANR	ANR

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/201	8 10:00 - 12/07/	2018 09:00
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
4-Bromophenyl phenyl ether	μg/L	-/-	1/Year	Composite	ANR	ANR
4-Chloro-3-methylphenol	μg/L	-/-	1/Year	Composite	ANR	ANR
4-Chlorophenyl phenyl ether	μg/L	-/-	1/Year	Composite	ANR	ANR
4-Nitrophenol	μg/L	-/-	1/Year	Composite	ANR	ANR
Acenaphthene	μg/L	-/-	1/Year	Composite	ANR	ANR
Acenaphthylene	μg/L	-/-	1/Year	Composite	ANR	ANR
Acrolein	μg/L	-/-	1/Year	Grab	ANR	ANR
Acrylonitrile	μg/L	-/-	1/Year	Grab	ANR	ANR
Aldrin	μg/L	-/-	1/Year	Composite	ANR	ANR
alpha-BHC	μg/L	-/-	1/Year	Composite	ANR	ANR
alpha-Endosulfan	μg/L	-/-	1/Year	Composite	ANR	ANR
Anthracene	μg/L	-/-	1/Year	Composite	ANR	ANR
Aroclor 1016	μg/L	-/-	1/Year	Composite	ANR	ANR
Aroclor 1221	μg/L	-/-	1/Year	Composite	ANR	ANR
Aroclor 1232	μg/L	-/-	1/Year	Composite	ANR	ANR
Aroclor 1232 Aroclor 1242	μg/L	-/-	1/Year	Composite	ANR	ANR
Aroclor 1242 Aroclor 1248	μg/L	-/-	1/Year	Composite	ANR	ANR
Aroclor 1246 Aroclor 1254		-/-	1/Year	Composite	ANR	ANR
	μg/L	-/-	1/Year	'		
Aroclor 1260	μg/L	-/-	1/Year	Composite Composite	ANR ANR	ANR ANR
Arsenic Asbestos	μg/L		·			
	MFL	-/-	1/Year	Composite	ANR	ANR
Benzene	μg/L	-/-	1/Year	Grab	ANR	ANR
Benzidine	μg/L	-/-	1/Year	Composite	ANR	ANR
Benzo(a)anthracene	μg/L	-/-	1/Year	Composite	ANR	ANR
Benzo(a)pyrene	μg/L	-/-	1/Year	Composite	ANR	ANR
Benzo(b)fluoranthene	μg/L	-/-	1/Year	Composite	ANR	ANR
Benzo(g,h,i)Perylene	μg/L	-/-	1/Year	Composite	ANR	ANR
Benzo(k)fluoranthene	μg/L	-/-	1/Year	Composite	ANR	ANR
Beryllium	μg/L	-/-	1/Year	Composite	ANR	ANR
beta-BHC	μg/L	-/-	1/Year	Composite	ANR	ANR
beta-Endosulfan	μg/L	-/-	1/Year	Composite	ANR	ANR
Bis (2-Chloroethoxy) Methane	μg/L	-/-	1/Year	Composite	ANR	ANR
Bis (2-Chloroethyl) Ether	μg/L	-/-	1/Year	Composite	ANR	ANR
Bis (2-Chloroisopropyl) Ether	μg/L	-/-	1/Year	Composite	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	μg/L	-/-	1/Year	Composite	ANR	ANR
Bromodichloromethane	μg/L	-/-	1/Year	Grab	ANR	ANR
Bromoform	μg/L	-/-	1/Year	Grab	ANR	ANR
Bromomethane	μg/L	-/-	1/Year	Grab	ANR	ANR
Butyl benzylphthalate	μg/L	-/-	1/Year	Composite	ANR	ANR
Carbon Tetrachloride	μg/L	-/-	1/Year	Grab	ANR	ANR
Chlordane	μg/L	-/-	1/Year	Composite	ANR	ANR
Chlorobenzene	μg/L	-/-	1/Year	Grab	ANR	ANR
Chloroethane	μg/L	-/-	1/Year	Grab	ANR	ANR
Chloroform (Trichloromethane)	μg/L	-/-	1/Year	Grab	ANR	ANR
Chloromethane (Methyl Chloride)	μg/L	-/-	1/Year	Grab	ANR	ANR
Chromium	μg/L	-/-	1/Year	Composite	ANR	ANR
Chromium VI (Hexavalent)	μg/L	-/-	1/Year	Composite	ANR	ANR
Chrysene	μg/L	-/-	1/Year	Composite	ANR	ANR
cis-1,3-Dichloropropene	μg/L	-/-	1/Year	Grab	ANR	ANR
delta-BHC	μg/L	-/-	1/Year	Composite	ANR	ANR
Dibenz(a,h)anthracene	μg/L	-/-	1/Year	Composite	ANR	ANR
Dibromochloromethane	μg/L	-/-	1/Year	Grab	ANR	ANR
Dieldrin	μg/L	-/-	1/Year	Composite	ANR	ANR
Diethyl phthalate	μg/L	-/-	1/Year	Composite	ANR	ANR
Dimethyl phthalate	μg/L	-/-	1/Year	Composite	ANR	ANR
Di-n-butyl phthalate		-/-		Composite		
Di-ri-butyi pritrialate	μg/L	-/-	1/Year	Composite	ANR	ANR

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/201	8 10:00 - 12/07/	2018 09:00
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Di-n-octyl phthalate	μg/L	-/-	1/Year	Composite	ANR	ANR
Endosulfan Sulfate	μg/L	-/-	1/Year	Composite	ANR	ANR
Endrin	μg/L	-/-	1/Year	Composite	ANR	ANR
Endrin Aldehyde	μg/L	-/-	1/Year	Composite	ANR	ANR
Ethylbenzene	μg/L	-/-	1/Year	Grab	ANR	ANR
Fluoranthene	μg/L	-/-	1/Year	Composite	ANR	ANR
Fluorene	µg/L	-/-	1/Year	Composite	ANR	ANR
gamma-BHC (Lindane)	μg/L	-/-	1/Year	Composite	ANR	ANR
Heptachlor	μg/L	-/-	1/Year	Composite	ANR	ANR
Heptachlor Epoxide	µg/L	-/-	1/Year	Composite	ANR	ANR
Hexachlorobenzene	μg/L	-/-	1/Year	Composite	ANR	ANR
Hexachlorobutadiene	μg/L	-/-	1/Year	Composite	ANR	ANR
Hexachlorocyclopentadiene	μg/L	-/-	1/Year	Composite	ANR	ANR
Hexachloroethane		-/-	1/Year		ANR	ANR
	μg/L	-/- -/-	1/Year	Composite		
Indeno(1,2,3-cd)pyrene	μg/L	·		Composite	ANR	ANR
Isophorone Mathylar a shlarida	µg/L	-/-	1/Year	Composite	ANR	ANR
Methylene chloride	μg/L	-/-	1/Year	Grab	ANR	ANR
Naphthalene	μg/L	-/-	1/Year	Grab	ANR	ANR
Naphthalene	μg/L	-/-	1/Year	Composite	ANR	ANR
Nitrobenzene	μg/L	-/-	1/Year	Composite	ANR	ANR
N-Nitrosodimethylamine	μg/L	-/-	1/Year	Composite	ANR	ANR
N-Nitroso-di-n-propylamine	μg/L	-/-	1/Year	Composite	ANR	ANR
N-Nitrosodiphenylamine	μg/L	-/-	1/Year	Composite	ANR	ANR
Pentachlorophenol	μg/L	-/-	1/Year	Composite	ANR	ANR
Phenanthrene	μg/L	-/-	1/Year	Composite	ANR	ANR
Phenol	μg/L	-/-	1/Year	Composite	ANR	ANR
Pyrene	μg/L	-/-	1/Year	Composite	ANR	ANR
Tetrachloroethene	μg/L	-/-	1/Year	Grab	ANR	ANR
Toluene	μg/L	-/-	1/Year	Grab	ANR	ANR
Toxaphene	μg/L	-/-	1/Year	Composite	ANR	ANR
trans-1,2-Dichloroethene	μg/L	-/-	1/Year	Grab	ANR	ANR
trans-1,3-Dichloropropene	μg/L	-/-	1/Year	Grab	ANR	ANR
Trichloroethene	μg/L	-/-	1/Year	Grab	ANR	ANR
Trichlorofluoromethane	μg/L	-/-	1/Year	Grab	ANR	ANR
Vinyl chloride	μg/L	-/-	1/Year	Grab	ANR	ANR
Xylenes (Total)	μg/L	-/-	1/Year	Grab	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLU		Į.	l .	Į.	I.	- U
Aluminum	μg/L	-/-	1/Year	Composite	ANR	ANR
Chlorpyrifos	μg/L	-/-	1/Year	Composite	ANR	ANR
Diazinon	μg/L	-/-	1/Year	Composite	ANR	ANR
E. Coli	MPN/100mL	-/-	1/Year	Grab	ANR	ANR
Hardness (as CaCO3)	mg/L	-/-	1/Year	Composite	ANR	ANR
	mg/L	-/-	1/Year	Composite	ANR	ANR
Selenium		-/-	1/Discharge	Composite	0.57	J (DNQ)
Silver	μg/L	-/-	1/Discharge	Composite	ND < 0.50	U U
	μg/L	-/-				
Total Suspended Solids	mg/L		1/Year	Composite	14	
Vanadium	μg/L	-/-	1/Year	Composite	ANR	ANR
ADDITIONAL POLLUTANTS ⁽²⁾	1	· ·	A 1 11/1 10/1			
Aluminum, dissolved	μg/L	-/-	Additional/Year	Composite	ANR	ANR
Antimony, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.69	U (B)
Arsenic, dissolved	μg/L	-/-	Additional/Year	Composite	ANR	ANR
Beryllium, dissolved	μg/L	-/-	Additional/Year	Composite	ANR	ANR
Boron, dissolved	mg/L	-/-	Additional/Year	Composite	ANR	ANR
Cadmium, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.25	U
Chromium, dissolved	μg/L	-/-	Additional/Year	Composite	ANR	ANR
cis-1,2-Dichloroethene	μg/L	-/-	Additional/Year	Grab	ANR	ANR

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/2018 10:00 - 12/07/2018 09:00			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Copper, dissolved	μg/L	-/-	Additional/Discharge	Composite	4.8		
Hardness, dissolved (as CaCO3)	mg/L	-/-	Additional/Year	Composite	ANR	ANR	
Human Bacteroides	CEs/100mL	-/-	Additional/Year	Grab	ANR	ANR	
Iron, dissolved	mg/L	-/-	Additional/Year	Composite	ANR	ANR	
Lead, dissolved	μg/L	-/-	Additional/Discharge	Composite	0.62	J (DNQ)	
Mercury, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.10	U	
Nickel, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 5.0	U	
Nitrate - N	mg/L	-/-	Additional/Discharge	Composite	0.96		
Nitrite - N	mg/L	-/-	Additional/Discharge	Composite	ND < 0.025	U	
Selenium, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.50	U	
Silver, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.50	U	
Thallium, dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 0.50	U	
Vanadium, dissolved	μg/L	-/-	Additional/Year	Composite	ANR	ANR	
Zinc, Dissolved	μg/L	-/-	Additional/Discharge	Composite	ND < 12	U	

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

Sample Type: Composite Sample Date: December 07, 2018

ANALYTE	OUTFALL SAMPLE FREQUENCY	LAB MDL (μg/L)	LAB RL (µg/L)	LAB RESULT (μg/L)	LABORATORY/ VALIDATION QUALIFIER	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	TCDD EQUIVALENT (w/out DNQ Values) (μg/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	7.4E-07	4.8E-05	7.4E-05		0.01	0.05	3.7E-08
1,2,3,4,6,7,8-HpCDF	1/Discharge	3.6E-07	4.8E-05	1.2E-05	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	4.3E-07	4.8E-05	2.1E-06	U (B)	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	2.6E-07	4.8E-05	2.8E-06	U (B)	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	2.4E-07	4.8E-05	1.6E-06	J (DNQ)	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	2.5E-07	4.8E-05	3.1E-06	U (B)	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	2.1E-07	4.8E-05	1.4E-06	U (B)	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	2.4E-07	4.8E-05	3.1E-06	U (B)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	1.4E-07	4.8E-05	1.9E-06	U (B)	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	2.5E-07	4.8E-05	1.7E-06	J (DNQ)	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	2.1E-07	4.8E-05	1.1E-06	UJ (*III)	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	1.5E-07	4.8E-05	1.3E-06	J (DNQ)	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	2.7E-07	4.8E-05	1.1E-06	J (DNQ)	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	2.2E-07	9.7E-06	8.1E-07	UJ (*III)	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	5.7E-07	9.7E-06	5.7E-07	U	0.1	0.8	ND
OCDD	1/Discharge	1.0E-06	9.7E-05	9.0E-04	U (B)	0.0001	0.01	ND
OCDF	1/Discharge	5.1E-07	9.7E-05	4.6E-05	U (B)	0.0001	0.02	ND

TCDD TEQ w/out DNQ Values ⁽⁴⁾	3.7E-08	

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.8E-08

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

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ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	OUTFALL SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15/-	1/Discharge	1.10 +/- 0.829	1.22	U
Gross Beta	pCi/L	50/-	1/Discharge	2.28 +/- 0.829	1.09	J (B)
Combined Radium-226 & Radium-228	pCi/L	5.0/-	1/Discharge	0.675 +/- 0.445	NM	U
Strontium-90	pCi/L	8.0/-	1/Discharge	0.0693 +/- 0.367	0.644	U
Tritium	pCi/L	20,000/-	1/Discharge	-198 +/- 193	368	U
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200/-	1/Discharge	3.71 +/- 7.73	13.5	U
Uranium	pCi/L	20/-	1/Discharge	0.490 +/- 0.363	0.339	U (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS						
Potassium-40	pCi/L	-/-	1/Discharge	-23.2 +/- 87.3	178	U

FIRST QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

	DEDMITTIMIT				8 10:00 - 12/07/2 Grab & Composi	
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	64.33/-	1/Discharge	Meas	0.158274	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	8,048/-	1/Discharge	Grab	2.1	J (DNQ)
PRIORITY POLLUTANTS						
Antimony	LBS/DAY	3.22/-	1/Discharge	Composite	ND	U
Cadmium	LBS/DAY	2.15/-	1/Discharge	Composite	ND	U
Copper	LBS/DAY	7/-	1/Discharge	Composite	0.0059	
Cyanide	LBS/DAY	5.1/-	1/Discharge	Composite	ND	U
Lead	LBS/DAY	2.8/-	1/Discharge	Composite	0.0033	
Mercury	LBS/DAY	0.07/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	46.14/-	1/Discharge	Composite	ND	U
TCDD TEQ_NoDNQ ⁽⁴⁾	LBS/DAY	1.5E-08/-	1/Discharge	Composite	4.9E-11	
Thallium	LBS/DAY	1.1/-	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	64.4/-	1/Discharge	Composite	ND	U
NON-CONVENTIONAL POLLUTANTS						
Boron	LBS/DAY	537/-	1/Year	Composite	ANR	ANR
Chloride	LBS/DAY	80,477/-	1/Discharge	Composite	3.3	
Fluoride	LBS/DAY	858/-	1/Year	Composite	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365/-	1/Discharge	Composite	1.3	
Perchlorate	LBS/DAY	3.22/-	1/Semiannual	Composite	ND	U
Sulfate	LBS/DAY	134,128/-	1/Discharge	Composite	3.6	
Total Dissolved Solids	LBS/DAY	456,034/-	1/Discharge	Composite	61	

ARROYO SIMI RECEIVING WATER (RSW-002, FRONTIER PARK SAMPLING LOCATION)

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/06/2018 12:35		
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX/MONTHLY AVG	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS	<u>.</u>					
4,4'-DDD	μg/L	0.0014/-	1/Quarter	Grab	ND < 0.0041	U
4,4'-DDE	μg/L	0.001/-	1/Quarter	Grab	0.0040	J (DNQ)
4,4'-DDT	μg/L	0.001/-	1/Quarter	Grab	ND < 0.0041	U
Aroclor 1016	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Aroclor 1221	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Aroclor 1232	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Aroclor 1242	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Aroclor 1248	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Aroclor 1254	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Aroclor 1260	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.10	U
Chlordane	μg/L	0.001/-	1/Quarter	Grab	ND < 0.082	U
Chlorpyrifos	μg/L	0.02/-	1/Quarter	Grab	ND < 0.034	U
Diazinon	μg/L	0.16/-	1/Quarter	Grab	ND < 0.026	U
Dieldrin	μg/L	0.0002/-	1/Quarter	Grab	ND < 0.0021	U
E. coli	MPN/100mL	235/-	1/Year	Grab	ANR	ANR
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	Grab	7.30	*
Toxaphene	μg/L	0.0003/-	1/Quarter	Grab	ND < 0.26	U
POLLUTANTS WITHOUT LIMITS						
Hardness (as CaCO ₃)	mg/L	-/-	1/Quarter	Grab	73	
Priority Pollutants	NA	-/-	1/5 Years	Grab	ANR	ANR
Temperature (Field)	Deg F	-/-	1/Quarter	Grab	47.9	*
TCDD - Equivalents	μg/L	-/-	1/Year	Grab	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	Grab	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	Meas	0.6	*

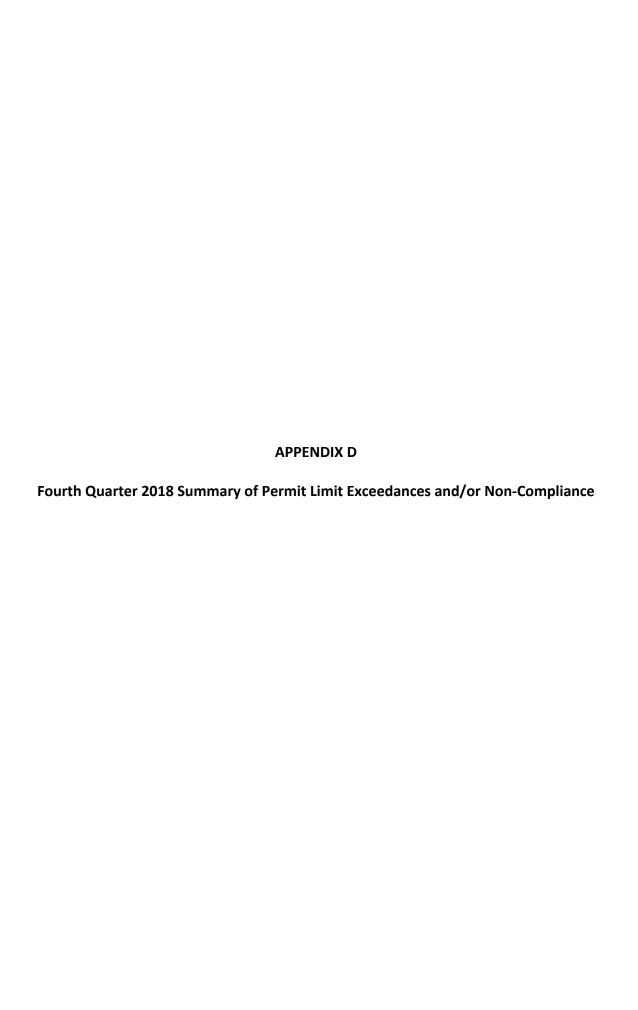


TABLE D SUMMARY OF PERMIT LIMIT EXCEEDANCES AND/OR NON-COMPLIANCE

FOURTH QUARTER 2018 REPORTING SUMMARY THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

DAILY MAXIMUM BENCHMARK LIMIT EXCEEDANCES AND/OR NON-COMPLIANCE								
OUTFALL	LOCATIONS	SAMPLE DATE	SAMPLE TYPE	ANALYTE	PERMIT LIMIT DAILY MAX	DAILY MAX RESULT	UNITS	VALIDATION QUALIFIER
Outfall 002	South Slope below R-2 Pond	12/7/2018	Comp	Copper	14/-	52	μg/L	
Outfall 002	South Slope below R-2 Pond	12/7/2018	Comp	Gross Alpha*	15/-	22.3 +/-5.45	pCi/L	J- (*III)
Outfall 002	South Slope below R-2 Pond	12/7/2018	Comp	Iron	0.3/-	98	mg/L	-
Outfall 002	South Slope below R-2 Pond	12/7/2018	Comp	Lead	5.2/-	88	μg/L	
Outfall 002	South Slope below R-2 Pond	12/7/2018	Comp	Selenium	(5) 8.2/-	11 ^(f)	μg/L	J- (Q)
Outfall 002	South Slope below R-2 Pond	12/7/2018	Comp	Zinc	119/-	430	μg/L	

^{* =} Gross alpha minus total uranium was calculated to be 21.05 +/- 5.60 pCi/L which exceeds the Daily Maximum Benchmark Limit of 15 pCi/L. Compliance is based on the annual average. The only other discharge event for Outfall 002 was on March 23, 2018. Averaging the December and March data gives an annual average of 11.70 +/- 2.95 pCi/L, which is below the Daily Maximum Benchmark Limit.

	DAILY MAXIMUM PERMIT LIMIT EXCEEDANCES AND/OR NON-COMPLIANCE							
OUTFALL	LOCATIONS	SAMPLE DATE	SAMPLE TYPE	ANALYTE	PERMIT LIMIT DAILY MAX	DAILY MAX RESULT	UNITS	VALIDATION QUALIFIER
Outfall 008	Happy Valley Drainage	12/7/2018	Comp	Copper	14/-	15	μg/L	
Outfall 008	Happy Valley Drainage	12/7/2018	Comp	Cyanide	9.5/-	15	μg/L	
Outfall 008	Happy Valley Drainage	12/7/2018	Comp	Lead	5.2/-	54	μg/L	
Outfall 009	WS-13 Drainage	12/7/2018	Comp	TCDD TEQ w/out DNQ	2.8E-08/-	3.7E-08	μg/L	

APPENDIX E

Fourth Quarter 2018 Analytical Laboratory Report, Chain of Custody Forms, and Validation Reports

APPENDIX E

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4	Outfall002 - 440-226838-1, December 07, 2018, TestAmerica Analytical Report
5	Outfall002 - 440-226838-2, December 07, 2018, MECx Data Validation Report
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14	Outfall008 - 440-226830-2, December 07, 2018, TestAmerica Analytical Report
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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-226560-1

Prepared for

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

9 January 2019





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- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226560-1

Project Manager: Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0 **Laboratory:** TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20181206 _Grab	440-226560-1	N/A	Water	12/06/2018 9:45 AM	E120.1, E1664, E624, SM2540F
TB 201081206	440-226570-3	N/A	Water	12/06/2018 9:45 AM	E624



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226560-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The lab indicated that one trip blank vial contained headspace, but did not indicate if that was the vial that was used for analysis. No qualifiers were applied.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason	TABLE 3 - REASON CODE REFERENCE					
Code	Organic	Inorganic				
Н	Holding time was exceeded.	Holding time was exceeded.				
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.				
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.				
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.				
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.				
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.				
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.				
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.				
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.				
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.				
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.				
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.				
А	Not applicable.	Serial dilution %D was outside control limits.				
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.				
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.				



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—Volatile Organic Compounds (VOCs)

K. Zilis of MEC^x reviewed the SDG on January 11, 2019

The sample and trip blank listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2), EPA Method 624, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water samples were analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The samples was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were \geq 0.05 for all applicable target compounds. The initial calibration %RSDs were \leq 35%, or r^2 values \geq 0.990. The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

111.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20181206 _Grab. Recoveries and RPDs were within the laboratory control limits with the exception of the recoveries for cis-1,3-dichloroethene and trans-1,3-dichloroethene. Both recoveries were high at 153% and 139% with upper recovery control limits of 133 and 138, respectively. The RPD for cis-1,3-dichloroethene was 24% with a QC limit of 20%. Neither compound was detected in the samples and no qualifiers were applied.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

11.4.1. TRIP BLANKS

Sample TB_201081206 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.



11.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ±30 seconds for retention times and -50%/+100% for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 32 target compounds by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

M. Hilchey of MEC^X reviewed the SDG on January 9, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), Standard Methods for the Examination of Water and Wastewater 2540F, EPA Methods 1664A and 120.1 and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

IV.1. HOLDING TIMES

The analytical holding times, as noted below, were met.

- 7 days for settleable solids
- 28 days for HEM (oil and grease)
- 28 days for specific conductance



IV.2. CALIBRATION

Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM or specific conductance. The method blank is not applicable to settleable solids.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was ≤11%. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified, and the HEM sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL. It should be noted that no sample raw data was presented in the SDG for specific conductance or settleable solids analyses; no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4402265601

Analysis Me	thod:	E120.1							
Sample Name O	utfall002_20	181206 _Grab		Matrix Ty	pe: W I	Result Typ	e: TRG		
Lab Sample Name:	440-226560)-1 Samp	le Date/Time:	12/06/2018	09:45		Validati	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Specific Conductance Analysis Me	ethod:	CONDSPEC E1664	140	1.0	1.0	umhos/	С		
Sample Name O	utfall002_20	181206 _Grab		Matrix Ty	pe: W I	Result Typ	e: TRG		
Lab Sample Name:	440-226560)-1 Samp	le Date/Time:	12/06/2018	09:45		Validati	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
HEM (Oil & Grease)		HEMOILGREAS E	S	1.5	5.3	mg/L	U	U	

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Analysis Method: E624

Sample Name Outfa	.ll002_20181206 _Grab		Matrix Ty	pe: W	Result Typ	e: TRG		
Lab Sample Name:	440-226560-1 Sample	Date/Time:	12/06/2018	09:45		Validati	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
1,1,1-Trichloroethane	71-55-6		0.25	0.50	ug/L	U	U	
1,1,2,2-Tetrachloroethane	79-34-5		0.25	0.50	ug/L	U	U	
1,1,2-Trichloro-1,2,2-trifluoro	ethane 76-13-1		0.50	2.0	ug/L	U	U	
1,1,2-Trichloroethane	79-00-5		0.25	0.50	ug/L	U	U	
1,1-Dichloroethane	75-34-3		0.25	0.50	ug/L	U	U	
1,1-Dichloroethene	75-35-4		0.25	0.50	ug/L	U	U	
1,2-Dichlorobenzene	95-50-1		0.25	0.50	ug/L	U	U	
1,2-Dichloroethane	107-06-2		0.25	0.50	ug/L	U	U	
1,2-Dichloropropane	78-87-5		0.25	0.50	ug/L	U	U	
1,3-Dichlorobenzene	541-73-1		0.25	0.50	ug/L	U	U	
1,4-Dichlorobenzene	106-46-7		0.25	0.50	ug/L	U	U	
Benzene	71-43-2		0.25	0.50	ug/L	U	U	
Bromodichloromethane	75-27-4		0.25	0.50	ug/L	U	U	
Bromoform	75-25-2		0.40	1.0	ug/L	U	U	
Bromomethane	74-83-9		0.25	0.50	ug/L	U	U	
Carbon tetrachloride	56-23-5		0.25	0.50	ug/L	U	U	
Chlorobenzene	108-90-7		0.25	0.50	ug/L	U	U	
Chloroethane	75-00-3		0.40	1.0	ug/L	U	U	
Chloroform	67-66-3		0.25	0.50	ug/L	U	U	
Chloromethane	74-87-3		0.25	0.50	ug/L	U	U	
cis-1,2-Dichloroethene	156-59-2		0.25	0.50	ug/L	U	U	
cis-1,3-Dichloropropene	10061-01-5		0.25	0.50	ug/L	U	U	
Dibromochloromethane	124-48-1		0.25	0.50	ug/L	U	U	
Ethylbenzene	100-41-4		0.25	0.50	ug/L	U	U	
Methylene Chloride	75-09-2		0.88	2.0	ug/L	U	U	
Naphthalene	91-20-3		0.40	1.0	ug/L	U	U	
Tetrachloroethene	127-18-4		0.25	0.50	ug/L	U	U	
Toluene	108-88-3		0.25	0.50	ug/L	U	U	
trans-1,2-Dichloroethene	156-60-5		0.25	0.50	ug/L	U	U	
trans-1,3-Dichloropropene	10061-02-6		0.25	0.50	ug/L	U	U	
Trichloroethene	79-01-6		0.25	0.50	ug/L	U	U	
Vinyl chloride	75-01-4		0.25	0.50	ug/L	U	U	

Thursday, January 17, 2019 Page 2 of 4

Analysis Method: E624

Sample Name TB_20	1081206	Matrix Ty	ype: W	Result Typ	e: TRG		
Lab Sample Name: 44	Sample Date/Time:	12/06/2018	09:45		Validati	on Level: 8	
Analyte	CAS No Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
1,1,1-Trichloroethane	71-55-6	0.25	0.50	ug/L	U	U	
1,1,2,2-Tetrachloroethane	79-34-5	0.25	0.50	ug/L	U	U	
1,1,2-Trichloro-1,2,2-trifluoroet	hane 76-13-1	0.50	2.0	ug/L	U	U	
1,1,2-Trichloroethane	79-00-5	0.25	0.50	ug/L	U	U	
1,1-Dichloroethane	75-34-3	0.25	0.50	ug/L	U	U	
1,1-Dichloroethene	75-35-4	0.25	0.50	ug/L	U	U	
1,2-Dichlorobenzene	95-50-1	0.25	0.50	ug/L	U	U	
1,2-Dichloroethane	107-06-2	0.25	0.50	ug/L	U	U	
1,2-Dichloropropane	78-87-5	0.25	0.50	ug/L	U	U	
1,3-Dichlorobenzene	541-73-1	0.25	0.50	ug/L	U	U	
1,4-Dichlorobenzene	106-46-7	0.25	0.50	ug/L	U	U	
Benzene	71-43-2	0.25	0.50	ug/L	U	U	
Bromodichloromethane	75-27-4	0.25	0.50	ug/L	U	U	
Bromoform	75-25-2	0.40	1.0	ug/L	U	U	
Bromomethane	74-83-9	0.25	0.50	ug/L	U	U	
Carbon tetrachloride	56-23-5	0.25	0.50	ug/L	U	U	
Chlorobenzene	108-90-7	0.25	0.50	ug/L	U	U	
Chloroethane	75-00-3	0.40	1.0	ug/L	U	U	
Chloroform	67-66-3	0.25	0.50	ug/L	U	U	
Chloromethane	74-87-3	0.25	0.50	ug/L	U	U	
cis-1,2-Dichloroethene	156-59-2	0.25	0.50	ug/L	U	U	
cis-1,3-Dichloropropene	10061-01-5	0.25	0.50	ug/L	U	U	
Dibromochloromethane	124-48-1	0.25	0.50	ug/L	U	U	
Ethylbenzene	100-41-4	0.25	0.50	ug/L	U	U	
Methylene Chloride	75-09-2	0.88	2.0	ug/L	U	U	
Naphthalene	91-20-3	0.40	1.0	ug/L	U	U	
Tetrachloroethene	127-18-4	0.25	0.50	ug/L	U	U	
Toluene	108-88-3	0.25	0.50	ug/L	U	U	
trans-1,2-Dichloroethene	156-60-5	0.25	0.50	ug/L	U	U	
trans-1,3-Dichloropropene	10061-02-6	0.25	0.50	ug/L	U	U	
Trichloroethene	79-01-6	0.25	0.50	ug/L	U	U	
Vinyl chloride	75-01-4	0.25	0.50	ug/L	U	U	

Thursday, January 17, 2019 Page 3 of 4

Analysis Method: SM2540F

Sample Name (Outfall002_20181206	_Grab	Matrix Ty	pe: W F	Result Type	: TRG		
Lab Sample Name:	440-226560-1	Sample Date/Time:	12/06/2018	09:45		Validati	on Level: 8	
Analyte	CAS N	o Result Value	DL	LOQ		Lab Qualifier	Validation Qualifier	Validation Reason Code
Settleable Solids	SETTLE IDS	CABLSOL 0.10	0.10	0.10	ml/l/hr			

Thursday, January 17, 2019 Page 4 of 4



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226560-1

Client Project/Site: Quarterly Outfall 002 Grab

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Ushi Patel

Authorized for release by: 12/31/2018 11:51:48 AM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ······

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Urvashi Patel Manager of Project Management 12/31/2018 11:51:48 AM Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Grab TestAmerica Job ID: 440-226560-1

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Sample Summary

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226560-1	Outfall002_20181206 _Grab	Water	12/06/18 09:45	12/06/18 18:00
440-226560-3	TB_201081206	Water	12/06/18 09:45	12/06/18 18:00

Case Narrative

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Job ID: 440-226560-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-226560-1

Comments

No additional comments.

Receipt

The samples were received on 12/6/2018 6:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.2° C.

Receipt Exceptions

The following sample(s) was received with headspace in the sample container. This sample container was received with headspace. TB_201081206 (440-226560-3). Received one out of two voa vial HCL TB with headspace more than 6 mm. One remains.

GC/MS VOA

Method(s) 624: The matrix spike / matrix spike duplicate (MS/MSD) precision for analytical batch 440-516365 was outside control limits. Sample matrix interference is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-515658.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-519877 and analytical batch 440-519983. The Laboratory Control Sample (LCS) was performed in duplicate to provide precision data for this batch

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Lab Sample ID: 440-226560-1

Lab Sample ID. 440-220300-1

Matrix: Water

Client Sample ID: Outfall002_20181206 _Grab

Date Collected: 12/06/18 09:45 Date Received: 12/06/18 18:00

Method: 624 - Volatile Organi Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/11/18 20:36	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Benzene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Bromoform	ND		1.0	0.40	ug/L			12/11/18 20:36	1
Bromomethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Chloroethane	ND		1.0	0.40	ug/L			12/11/18 20:36	1
Chloroform	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Chloromethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/11/18 20:36	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Toluene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Trichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:36	1
Naphthalene	ND		1.0	0.40	ug/L			12/11/18 20:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120			-		12/11/18 20:36	1
Dibromofluoromethane (Surr)	97		76 - 132					12/11/18 20:36	1
Toluene-d8 (Surr)	102		80 - 128					12/11/18 20:36	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

General Chemistry Analyte HEM (Oil & Grease)	Result ND	Qualifier	RL 5.3		Unit mg/L	_ D	Prepared 12/28/18 13:23	Analyzed 12/29/18 08:09	Dil Fac
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	140		1.0	1.0	umhos/cm			12/07/18 14:16	1
Settleable Solids	0.10		0.10	0.10	mL/L/Hr			12/07/18 13:44	1

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Client Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Lab Sample ID: 440-226560-3

Matrix: Water

Client Sample ID: TB_201081206

Date Collected: 12/06/18 09:45 Date Received: 12/06/18 18:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/11/18 21:55	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
Benzene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
Bromoform	ND		1.0	0.40	ug/L			12/11/18 21:55	1
Bromomethane	ND		0.50	0.25				12/11/18 21:55	1
Carbon tetrachloride	ND		0.50	0.25	-			12/11/18 21:55	1
Chlorobenzene	ND		0.50		ug/L			12/11/18 21:55	1
Dibromochloromethane	ND		0.50		ug/L			12/11/18 21:55	1
Chloroethane	ND		1.0	0.40	ug/L			12/11/18 21:55	1
Chloroform	ND		0.50		ug/L			12/11/18 21:55	1
Chloromethane	ND		0.50	0.25	-			12/11/18 21:55	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
Bromodichloromethane	ND		0.50		ug/L			12/11/18 21:55	1
Ethylbenzene	ND		0.50		ug/L			12/11/18 21:55	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/11/18 21:55	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
Toluene	ND		0.50		ug/L			12/11/18 21:55	1
trans-1,2-Dichloroethene	ND		0.50	0.25	-			12/11/18 21:55	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 21:55	1
Vinyl chloride	ND		0.50	0.25	-			12/11/18 21:55	1
Trichloroethene	ND		0.50	0.25	-			12/11/18 21:55	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			12/11/18 21:55	1
Naphthalene	ND		1.0	0.40	-			12/11/18 21:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120			-		12/11/18 21:55	1
Dibromofluoromethane (Surr)	122		76 - 132					12/11/18 21:55	1
Toluene-d8 (Surr)	124		80 - 128					12/11/18 21:55	1

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Method Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Client Sample ID: Outfall002_20181206 _Grab

TestAmerica Job ID: 440-226560-1

Lab Sample ID: 440-226560-1

Matrix: Water

Date Collected: 12/06/18 09:45 Date Received: 12/06/18 18:00

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	516365	12/11/18 20:36	GMA	TAL IRV
Total/NA	Analysis	120.1		1			515688	12/07/18 14:16	XL	TAL IRV
Total/NA	Prep	1664A			950 mL	1000 mL	519877	12/28/18 13:23	JC1	TAL IRV
Total/NA	Analysis	1664A		1			519983	12/29/18 08:09	JC1	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	515658	12/07/18 13:44	ST	TAL IRV

Lab Sample ID: 440-226560-3 Client Sample ID: TB_201081206 **Matrix: Water**

Date Collected: 12/06/18 09:45

Date Received: 12/06/18 18:00

	_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
	Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
l	Total/NA	Analysis	624		1	10 mL	10 mL	516365	12/11/18 21:55	GMA	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-516365/21

Matrix: Water

Analysis Batch: 516365

Client Sample ID: Method Blank **Prep Type: Total/NA**

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/11/18 20:09	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Benzene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Bromoform	ND		1.0	0.40	ug/L			12/11/18 20:09	1
Bromomethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Chloroethane	ND		1.0	0.40	ug/L			12/11/18 20:09	1
Chloroform	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Chloromethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/11/18 20:09	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Toluene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/11/18 20:09	1
Trichloroethene	ND		0.50	0.25	ug/L			12/11/18 20:09	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			12/11/18 20:09	1
Naphthalene	ND		1.0	0.40	ug/L			12/11/18 20:09	1

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96	80 - 120		12/11/18 20:09	1
Dibromofluoromethane (Surr)	92	76 - 132		12/11/18 20:09	1
Toluene-d8 (Surr)	89	80 - 128		12/11/18 20:09	1

Lab Sample ID: LCS 440-516365/5

Matrix: Water

Analysis Batch: 516365

Client Sample ID:	Lab Control Sample
	Prep Type: Total/NA

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1,1-Trichloroethane	25.0	27.9		ug/L		111	70 - 130
1,1,2,2-Tetrachloroethane	25.0	26.1		ug/L		104	63 - 130
1,1,2-Trichloroethane	25.0	25.2		ug/L		101	70 - 130
1,1-Dichloroethane	25.0	23.9		ug/L		95	64 - 130
1,1-Dichloroethene	25.0	23.8		ug/L		95	70 - 130

TestAmerica Irvine

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-516365/5

Matrix: Water

Analysis Batch: 516365

Client Sample ID: Lab Control Sample Prep Type: Total/NA

7 maryolo Batom 010000	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier U	Jnit	D	%Rec	Limits
1,2-Dichlorobenzene	25.0	26.8		ıg/L		107	70 - 130
1,2-Dichloroethane	25.0	26.1	ι	ig/L		104	57 - 138
1,2-Dichloropropane	25.0	27.5	ι	ıg/L		110	67 - 130
1,3-Dichlorobenzene	25.0	26.3	ι	ıg/L		105	70 - 130
1,4-Dichlorobenzene	25.0	26.3	ι	ıg/L		105	70 - 130
Benzene	25.0	24.1	ι	ıg/L		97	68 - 130
Bromoform	25.0	27.1	ι	ıg/L		108	60 - 148
Bromomethane	25.0	25.5	ι	ıg/L		102	64 - 139
Carbon tetrachloride	25.0	27.1	ι	ıg/L		108	60 - 150
Chlorobenzene	25.0	25.4	ι	ıg/L		102	70 - 130
Dibromochloromethane	25.0	28.4	ι	ıg/L		114	69 - 145
Chloroethane	25.0	26.9	ι	ıg/L		107	64 - 135
Chloroform	25.0	26.8	ι	ıg/L		107	70 - 130
Chloromethane	25.0	19.5	ι	ıg/L		78	47 - 140
cis-1,3-Dichloropropene	25.0	28.8	ι	ıg/L		115	70 - 133
Bromodichloromethane	25.0	27.9	ι	ıg/L		111	70 - 132
Ethylbenzene	25.0	22.7	ι	ıg/L		91	70 - 130
Methylene Chloride	25.0	23.8	ι	ıg/L		95	52 - 130
Tetrachloroethene	25.0	25.5	ι	ıg/L		102	70 - 130
Toluene	25.0	22.4	ι	ıg/L		90	70 - 130
trans-1,2-Dichloroethene	25.0	25.5	ι	ıg/L		102	70 - 130
trans-1,3-Dichloropropene	25.0	27.9	ι	ıg/L		112	70 - 132
Vinyl chloride	25.0	21.6	ι	ıg/L		86	59 - 133
Trichloroethene	25.0	26.3	ι	ıg/L		105	70 - 130
cis-1,2-Dichloroethene	25.0	25.9	ι	ıg/L		104	70 - 133
Naphthalene	25.0	26.2	ι	ıg/L		105	60 - 140

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	102		76 - 132
Toluene-d8 (Surr)	93		80 - 128

Lab Sample ID: 440-226560-1 MS

Matrix: Water

Analysis Batch: 516365

Client Sample ID: Outfall002_20181206 _Grab Prep Type: Total/NA

Sample Sample Spike MS MS %Rec. **Result Qualifier** Added Result Qualifier Limits **Analyte** Unit D %Rec 1,1,1-Trichloroethane ND 25.0 27.4 ug/L 110 70 - 130 ND 1.1.2.2-Tetrachloroethane 25.0 27.0 ug/L 108 63 - 130ND 1,1,2-Trichloroethane 25.0 27.0 ug/L 108 70 - 130 1,1-Dichloroethane ND 25.0 25.8 ug/L 103 65 - 130 1,1-Dichloroethene ND 25.0 23.1 ug/L 92 70 - 130 1,2-Dichlorobenzene ND 25.0 26.4 106 70 - 130 ug/L ND 25.0 27.4 56 - 146 1,2-Dichloroethane ug/L 110 1,2-Dichloropropane ND 25.0 26.9 ug/L 108 69 - 130 ND 25.0 25.7 103 1.3-Dichlorobenzene ug/L 70 - 130 1,4-Dichlorobenzene ND 25.0 26.1 ug/L 105 70 - 130 Benzene ND 25.0 25.1 ug/L 100 66 - 130

TestAmerica Irvine

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12/31/2018

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-226560-1 MS

Matrix: Water

Analysis Batch: 516365

Client Sample ID: Outfall002_20181206 _Grab

Prep Type: Total/NA

Analysis Daten. 510303	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	•	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Bromoform	ND		25.0	29.8		ug/L		119	59 - 150
Bromomethane	ND		25.0	19.9		ug/L		80	62 - 131
Carbon tetrachloride	ND		25.0	26.3		ug/L		105	60 - 150
Chlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130
Dibromochloromethane	ND		25.0	29.3		ug/L		117	70 - 148
Chloroethane	ND		25.0	20.8		ug/L		83	68 - 130
Chloroform	ND		25.0	26.8		ug/L		107	70 - 130
Chloromethane	ND		25.0	15.1		ug/L		60	39 - 144
cis-1,3-Dichloropropene	ND		25.0	30.1		ug/L		120	70 - 133
Bromodichloromethane	ND		25.0	27.9		ug/L		112	70 - 138
Ethylbenzene	ND		25.0	24.9		ug/L		100	70 - 130
Methylene Chloride	ND		25.0	24.5		ug/L		98	52 - 130
Tetrachloroethene	ND		25.0	25.3		ug/L		101	70 - 137
Toluene	ND		25.0	25.3		ug/L		101	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
trans-1,3-Dichloropropene	ND		25.0	29.5		ug/L		118	70 - 138
Vinyl chloride	ND		25.0	16.6		ug/L		67	50 - 137
Trichloroethene	ND		25.0	25.6		ug/L		102	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.5		ug/L		106	70 - 130
Naphthalene	ND		25.0	25.9		ug/L		104	60 - 140

MS MS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	98	80 - 120
Dibromofluoromethane (Surr)	104	76 - 132
Toluene-d8 (Surr)	101	80 - 128

Lab Sample ID: 440-226560-1 MSD

Matrix: Water

Analysis Batch: 516365

Client Sample ID:	Outfall002	_20181206	_Grab
	Pre	p Type: To	tal/NA

7, C.C	Comple	Sample	Spike	MeD	MSD				%Rec.		RPD
	•	•	•				_	0/ 5			
Analyte		Qualifier	Added		Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1-Trichloroethane	ND		25.0	28.0		ug/L		112	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	25.5		ug/L		102	63 - 130	6	30
1,1,2-Trichloroethane	ND		25.0	31.9		ug/L		128	70 - 130	17	25
1,1-Dichloroethane	ND		25.0	26.7		ug/L		107	65 - 130	3	20
1,1-Dichloroethene	ND		25.0	24.1		ug/L		96	70 - 130	4	20
1,2-Dichlorobenzene	ND		25.0	26.8		ug/L		107	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	28.0		ug/L		112	56 - 146	2	20
1,2-Dichloropropane	ND		25.0	26.6		ug/L		106	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	26.4		ug/L		106	70 - 130	1	20
Benzene	ND		25.0	25.2		ug/L		101	66 - 130	1	20
Bromoform	ND		25.0	33.4		ug/L		134	59 - 150	11	25
Bromomethane	ND		25.0	21.3		ug/L		85	62 - 131	7	25
Carbon tetrachloride	ND		25.0	27.2		ug/L		109	60 - 150	3	25
Chlorobenzene	ND		25.0	25.4		ug/L		101	70 - 130	1	20
Dibromochloromethane	ND		25.0	32.4		ug/L		130	70 - 148	10	25
Chloroethane	ND		25.0	22.2		ug/L		89	68 - 130	7	25

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Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Client Sample ID: Duplicate

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-226560-1 MSD

Matrix: Water

Analysis Batch: 516365

Client Sample ID: Outfall002_20181206 _Grab

Prep Type: Total/NA

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloroform	ND		25.0	27.7		ug/L		111	70 - 130	3	20
Chloromethane	ND		25.0	16.1		ug/L		65	39 - 144	7	25
cis-1,3-Dichloropropene	ND		25.0	38.3	LM BA	ug/L		153	70 - 133	24	20
Bromodichloromethane	ND		25.0	28.0		ug/L		112	70 - 138	0	20
Ethylbenzene	ND		25.0	24.7		ug/L		99	70 - 130	1	20
Methylene Chloride	ND		25.0	25.0		ug/L		100	52 - 130	2	20
Tetrachloroethene	ND		25.0	27.2		ug/L		109	70 - 137	7	20
Toluene	ND		25.0	27.1		ug/L		108	70 - 130	7	20
trans-1,2-Dichloroethene	ND		25.0	26.5		ug/L		106	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	34.7	LM	ug/L		139	70 - 138	16	25
Vinyl chloride	ND		25.0	17.9		ug/L		72	50 - 137	7	30
Trichloroethene	ND		25.0	26.1		ug/L		104	70 - 130	2	20
cis-1,2-Dichloroethene	ND		25.0	27.6		ug/L		111	70 - 130	4	20
Naphthalene	ND		25.0	26.6		ug/L		106	60 - 140	3	30

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	107		76 - 132
Toluene-d8 (Surr)	118		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-515688/3

Matrix: Water

Analysis Batch: 515688

MB MB

Analyte Result Qualifier RL **RL Unit** Prepared Analyzed Dil Fac Specific Conductance 1.0 1.0 umhos/cm 12/07/18 14:16 ND

Lab Sample ID: LCS 440-515688/4

Matrix: Water

Analysis Batch: 515688

-		Spike	LCS	LCS				%Rec.	
Analyte		Added	Result	Qualifier	Unit	D	%Rec	Limits	
Specific Conductance		953	959		umhos/cm	_	101	90 - 110	

Lab Sample ID: 440-225729-A-1 DU

Matrix: Water

Analysis Ratch: 515688

Analysis Batch: 515666									
•	Sample	Sample	DU	DU					RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D		RPD	Limit
Specific Conductance	260	· 	 262	-	umhos/cm	_	 	2	5

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QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 519877

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-519877/1-A **Matrix: Water**

Lab Sample ID: LCS 440-519877/2-A

Analysis Batch: 519983

HEM (Oil & Grease)

Matrix: Water

Analyte

Analyte

Analysis Batch: 519983

MB MB

Analyte

Result Qualifier ND

RL 5.0

MDL Unit 1.4 mg/L

Unit

mg/L

Unit

mg/L

Prepared

Analyzed <u>12/28/18 13:23</u> <u>12/29/18 08:09</u>

Dil Fac

Client Sample ID: Lab Control Sample

%Rec

85

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 519877

%Rec.

Limits

78 - 114

Lab Sample ID: LCSD 440-519877/3-A

Matrix: Water

HEM (Oil & Grease)

HEM (Oil & Grease)

Analysis Batch: 519983

Spike Added 40.0

Spike

Added

40.0

34.6

LCSD LCSD Result Qualifier

LCS LCS

34.1

Result Qualifier

D %Rec 87 %Rec. Limits 78 - 114

RPD RPD Limit

Prep Type: Total/NA

Prep Batch: 519877

QC Association Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

GC/MS VOA

Analysis Batch: 516365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226560-1	Outfall002_20181206 _Grab	Total/NA	Water	624	
440-226560-3	TB_201081206	Total/NA	Water	624	
MB 440-516365/21	Method Blank	Total/NA	Water	624	
LCS 440-516365/5	Lab Control Sample	Total/NA	Water	624	
440-226560-1 MS	Outfall002_20181206 _Grab	Total/NA	Water	624	
440-226560-1 MSD	Outfall002_20181206	Total/NA	Water	624	

General Chemistry

Analysis Batch: 515658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226560-1	Outfall002_20181206 _Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 515688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226560-1	Outfall002_20181206 _Grab	Total/NA	Water	120.1	
MB 440-515688/3	Method Blank	Total/NA	Water	120.1	
LCS 440-515688/4	Lab Control Sample	Total/NA	Water	120.1	
440-225729-A-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 519877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226560-1	Outfall002_20181206 _Grab	Total/NA	Water	1664A	
MB 440-519877/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-519877/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-519877/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 519983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226560-1	Outfall002_20181206 _Grab	Total/NA	Water	1664A	519877
MB 440-519877/1-A	Method Blank	Total/NA	Water	1664A	519877
LCS 440-519877/2-A	Lab Control Sample	Total/NA	Water	1664A	519877
LCSD 440-519877/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	519877

Definitions/Glossary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

TestAmerica Job ID: 440-226560-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
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BA Relative percent difference out of control

LM MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.						
α	Listed under the "D" column to designate that the result is reported on a dry weight basis						
%R	Percent Recovery						
CFL	Contains Free Liquid						
CNF	Contains No Free Liquid						
DER	Duplicate Error Ratio (normalized absolute difference)						
Dil Fac	Dilution Factor						
DL	Detection Limit (DoD/DOE)						
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample						
DLC	Decision Level Concentration (Radiochemistry)						
EDL	Estimated Detection Limit (Dioxin)						
LOD	Limit of Detection (DoD/DOE)						
LOQ	Limit of Quantitation (DoD/DOE)						

MDA Minimum Detectable Activity (Radiochemistry)
MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

PQL Practical Quantitation Limit

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TestAmerica Irvine

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Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226560-1

Project/Site: Quarterly Outfall 002 Grab

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program		EPA Region	Identification Number	Expiration Date	
California	State Pro	State Program		CA ELAP 2706	06-30-19	
• ,	•	ort, but the laboratory	is not certified by the	e governing authority. This	list may include analytes for which	
the agency does not o	offer certification.					
Analysis Method	Prep Method	Matrix	Analyt	e		
0 ,		Matrix Water		re Trichloro-1,2,2-trifluoroethal	ne	
Analysis Method			1,1,2-		ne	

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CHAIN OF CUSTODY FORM

Client Name	/Address				P	roject.			R	Q/s	R	R		ANAL	YSIS REC	UIRE)	Field Readings Meter serial #
Haley & Alc 5333 Mission San Diego, (Test Americ 17461 Deria 17461 Deria 1749 949-260 Cell 949-333	Irich n Center Rd Suite 300 CA 92108 a Contact. Urvashi Patel n Ave Suite #100 614 -3269 b-9055	et Service	Boeing-SSFL NPDES Permit 2018 Quarterly Outfall (001, 002, 011, Outfall 002 Grab Project Manager: Katherine M 520,289,8606, 520,904 6944 (11, 01											Field Readings: (include units) Time of Readings: 09(1) DO 9, 05 mg/L pH 7 1 pH unit Temp 7.47 0°F TRC0 035 mg/L	
TestAmenca Labo	-18-TestAmerica by and between Haley & Aldrich, inc., it ratories inc. In Smith- Lin Pour kus	s subsidiaries and affiliates	s, and	Field N	lanag	520.904 694 er Mark Doi 818 599.070	minick		Grease (E1664A-HEM)	s + Freon 113 (E624)	Settleable Solids (E160.5 (SM2540F))	Conductivity (SM2510B / E120 1)						Field readings QC by: W Checked Date/Time: U94)-
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSE	⊓ ∞ব	VOCs	Settle	S						Comments
			WM	1 L Glass Amber	2	HCI	15	No	Х									
	Outfall002_20161206_Grab	12/8/2018	WM	40 mL VOA	3	HCI	20	No		×								
	Odi:aii032_23101200_G180		WM	1 L Poly	1	None	70	Nρ			х							1
Outfall 002		0941	WM	500 mL Poly	1	None	75	No				х						
			WM	1 L Glass Amber	2	HCI	15	No	н									Hold 0
	Outfall002_20181208_Grab_Extra	12/6/2018	WM	40 mL VOA	3	HCI	20	No	<u></u>	н								Hold
		045	WM	500 mL Poly	1	None	75	No				н				<u> </u>		Hold
Trip Blank	TB-20181206	12/8/2019 OF4	F ^{wa}	40 mL VOA	2	HCł	20	Nρ	<u> </u>	×								
																+	440-2	26560 Chain of Custody
							<u> </u>			<u> </u>	_	ļ				+ -		
		1	L	L.,	L	1	L	<u> </u>	<u> </u>	<u> </u>	L	L	I					
Relinquished B	12.61	y / 143 1800	<u>u</u>	Company Company TH Av	! .A	1 drich	Receiv		<u> </u>		Date/T	ઇ	14:	30		24 Ho 48 Ho	our our le Integ	time. (Check)
Relinquished 8				Company			Receiv	ed B		TA	Date/T		12/4	18	1800	Store Data	sample Require	es for 6 months ements (Check) All Level IV:X

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-226560-1

Login Number: 226560 List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Creator: Avila, Stephanie 1		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	False	Headspace larger than 1/4" in one or more vials, one vial with accpt. headspace
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-226838-1

Prepared for

Haley & Aldrich, Inc. 600 South Meyer Avenue, Suite 100 Tucson, Arizona 85701

8 January 3, 2019





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- 2 Data Qualifier Reference
- 3 Reason Code Reference



INTRODUCTION

Task Order Title: Boeing SSFL NPDES
Contract: 40458-078 and 40458-083
MEC^x Project No.: 1272.003D.01 002
Sample Delivery Group: 440-226838-1

Project Manager: Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0 **Laboratory:** TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20181207_ Comp	440-226838-1	N/A	Water	12/07/201 8 10:05 AM	E180.1, E200.7, E200.8, E245.1, E300, E314.0, E608, E625, SM2340, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540, EPA-821-R-02-013
Outfall002_20181207_ Comp_F	440-226838-2	N/A	Water	12/07/201 8 10:05 AM	E200.7, E200.8, E245.1, SM2340



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COC) provided by the laboratories for sample delivery group (SDG) 440-226838-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.

The following issues were noted:

- Not all corrections to the original COC were initialed and dated.
- Volume was received for sample Outfall002_2018107_Comp_Extra; however, this sample was crossed out on the COC.
- An email from the client requested analysis for dissolved iron; however, this analysis was not performed for the original SDG. The analysis was performed on sample Outfall002_20181207_Comp, and included in revised SDG 440-226838-1 Rev(1). The revised data was reviewed for this report.
- The sample was submitted to Aquatic Bioassay Consulting Laboratories (ABC) for Method EPA-821-R-02-013 Chronic Toxicity Selenastrum.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason	TABLE 3 - REASON CODE REFERENCE				
Code	Organic	Inorganic			
Н	Holding time was exceeded.	Holding time was exceeded.			
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.			
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.			
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.			
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.			
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.			
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.			
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.			
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.			
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.			
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.			
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.			
А	Not applicable.	Serial dilution %D was outside control limits.			
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.			
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.			



Reason Code	Organic	Inorganic	
+	False positive – reported compound was not present.	False positive – reported compound was not present.	
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.	
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.	
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.	
?	TIC identity or reported retention time has been changed.	Not applicable.	
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.	
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.	
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.	
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	



IV. METHODS 200.7, 200.8, 245.1 AND SM2340B — METALS, MERCURY AND HARDNESS

M. Hilchey of MEC^x reviewed the SDG on January 8, 2019

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7, 200.8 and 245.1, Standard Methods for the Examination of Water and Wastewater 2340B, and the National Functional Guidelines for Inorganic Data Review (2014).

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met. As required on the COC, sample Outfall002_20181207_Comp_F was filtered and preserved within 24 hours of receipt at the laboratory. Sample Outfall002_201801217_Comp was filtered and preserved for dissolved iron analysis 13 days after receipt at the laboratory (see Sample Management section). The associated sample result was qualified as estimated (J).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were ≤5%.

QAPP calibration criteria were met. A blank and two standards were used for calibration of ICP-AES, a blank and four standards were used for calibration of ICP-MS, and a blank and five standards were used for calibration of mercury. The initial calibration r values were ≥0.995. CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and mercury, and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110% for all methods.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. **METHOD BLANKS**

There were no target analyte detections in the method blanks and calibration blanks with the exception of dissolved copper (0.823 μ g/L). The associated sample result was a detect greater than RL and <5× the blank concentration and was qualified as estimated with high bias (J+).

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or ±2× the reporting limit, whichever is greater. No target analytes were present in the ICSAs at >MDL, therefore, interference was not evaluated.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the QAPP control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20181207_Comp for ICP-AES. MS/MSD analyses were performed on samples Outfall002_20181207_Comp and Outfall002_20181207_Comp_F for mercury and ICP-MS. Results were not assessed when the parent sample concentration exceeded the spike amount by $4\times$. Recoveries and RPDs were within the QAPP control limits of 70-130% and \leq 20%, respectively, for all target analytes except total selenium recoveries (37%/40%). The associated sample result was qualified as estimated with a potential low bias (J-).

The laboratory did not perform post-digestion spike analyses.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the ICP-MS calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. EPA Method 608 –Pesticides and PCBs

K. Zilis of MEC^x reviewed the SDG on January 10, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1), EPA Method 608, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.



V.2. CALIBRATION

The initial calibration had %RSDs of \leq 10% or r^2 of \geq 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of \leq 15%.

V.3. QUALITY CONTROL SAMPLES

V.3.1. **METHOD BLANKS**

The target compounds were not detected in method blanks.

V.3.2. LABORATORY CONTROL SAMPLES

The recoveries of target compounds were within the laboratory control limits of 37-134%. Chlordane and toxaphene were not spiked in the LCS. RPDs were within 20%.

V.3.3. SURROGATE RECOVERY

PCB surrogate decachlorobiphenyl (DCB) was recovered at 27%, slightly below the laboratory control limits of 29-115% in the site sample. The data was qualified as estimated (UJ).

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed due to a lack of sample volume. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

V.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for Aroclors, and pesticides alpha-BHC, 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, chlordane, dieldrin and toxaphene by Method 608. Information for the toxaphene was added to the report and EDD from the raw data as toxaphene was not reported on the Level 4 report.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.



VI. EPA METHOD 314.0 — PERCHLORATE

M. Hilchey of MEC^X reviewed the SDG on January 10, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 314.0, and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was \geq 0.995. The initial calibration recovery was within QAPP control limits of 75-125% and the continuing calibration recoveries were within QAPP control limits of 85-115%. The MRL was recovered within the QAPP control limits of 70-130%. Interference check sample recovery was within the QAPP control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the QAPP control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20181207_Comp. Recoveries and RPDs met QAPP control limits of 80-120% and ≤15%, respectively.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCS)

K. Zilis of MEC^X reviewed the SDG on January 10, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 625, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were \geq 0.05 and %RSD \leq 35% or r^2 of \geq 0.990. The ICV and CCV RRFs were \geq 0.05 and %Ds were within the method control limit of \leq 20%.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. **METHOD BLANKS**

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

LCS recoveries and RPDs were within the laboratory control limits. Target analyte 2,4-dinitrotoluene was only reported in the raw data.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed due to a lack of sample volume. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.



VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ±30 seconds for retention times and -50%/+100% for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

M. Hilchey of MEC^x reviewed the SDG on January 8, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Methods 180.1, 300.0 and EPA-821-R-02-213, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B and 5540 and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

VIII.1. HOLDING TIMES

Distillation for total cyanide occurred 11 hours past the required holding time of 14 days after collection. The associated sample result was nondetect and was qualified as estimated (UJ). The analytical hold times for the remaining analyses, as listed below, were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 28 days for ammonia, chloride, and sulfate
- 36 hours from collection for Chronic Toxicity Selenastrum



VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were \geq 0.995 and all initial calibration verification recoveries were within 95-105% for anions and 90-110% for the remaining analyses, as appropriate. All continuing calibration verification recoveries were within 90-110% for all appropriate analyses. The MRL recovery for ammonia was within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by the laboratory.

For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity. Method Test Acceptability criteria (TAC) were met.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects. The laboratory negative controls were within the laboratory and method established compliance criteria for chronic toxicity.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicates recoveries were within the laboratory control limits. LCS/LCSD RPD for BOD met the laboratory control limit. Positive controls were within the laboratory and method established compliance criteria for chronic toxicity.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample Outfall002_20181207_Comp for turbidity. The RPD was ≤20%. Laboratory duplicate analysis was not performed on a sample from this SDG for the remaining methods.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample Outfall002_20181207_Comp for MBAS. Laboratory control limits of 50-125% recovery and ≤20% RPD were not met (31%/41% recoveries, 27% RPD). The nondetect sample result was qualified as estimated (UJ). Matrix spike analysis was not performed on a sample from this SDG for the remaining methods.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Reported nondetects are valid to the MDL.

Turbidity in sample Outfall002_20181207_Comp was reported from a 400× dilution.

VIII.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.





VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4402268381

Analysis Method E180.1

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units **Oualifier Qualifier** Notes Turbidity TURBIDITY 2500 40 16 NTU

Analysis Method E200.7

Sample Name OUTFALL002 20181207 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-2

Fraction: CAS No Result RLMDL Result **Analyte** Lab Validation Validation Value Units **Qualifier Qualifier** Notes Iron (Dissolved Lab) 7439-89-6DL 0.36 0.050 0.10 ug/L Н

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units **Oualifier Oualifier** Notes Iron 7439-89-6 98000 100 50 ug/L Zinc 7440-66-6 ug/L

Sample Name OUTFALL002 20181207 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-2

Analyte Fraction: CAS No. Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Zinc 7440-66-6 20 12 ug/L

Analysis Method E200.8

Sample Name OUTFALL002_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Fraction: CAS No Result RLMDL Result Analyte Lab Validation Validation Value Units **Qualifier** Qualifier Notes Cadmium T 7440-43-9 1.6 0.25 1.0 ug/L Copper Т 7440-50-8 52 2.0 0.50 ug/L Lead Τ 7439-92-1 88 1.0 0.50 ug/L Selenium Т 7782-49-2 11 2.0 J-0.50 ug/L

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Analysis Method E200.8

Sample Name OUTFALL002 20181207 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-2

Analyte Fraction: CAS No. Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Cadmium 7440-43-9 0.25 1.0 ug/L Copper D 7440-50-8 2.0 J+ 2.6 0.50 ug/L В Lead D 7439-92-1 1.0 0.50 ug/L U U Selenium D 7782-49-2 0.50 U IJ 2.0 ug/L

Analysis Method E245.1

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Result Fraction: CAS No Result RLMDL **Analyte** Lab Validation Validation Value Units **Qualifier** Qualifier Notes Mercury 7439-97-6 0.20 0.10 ug/L

Sample Name OUTFALL002_20181207_COMP_F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-2

Fraction: CAS No RL MDL **Analyte** Result Result Lab Validation Validation Value Units **Oualifier** Qualifier Notes D Mercury 7439-97-6 0.10 ug/L U 0.20

Analysis Method E300

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Chloride 16887-00-6 2.7 0.50 0.25 mg/L Nitrate (as N) N 14797-55-8 1.4 0.11 0.055 mg/L 0.15 Nitrite (as N) N 14797-65-0 0.025 0.025 J,DX DNQ mg/L Nitrite/Nitrate N NO2NO3 1.4 0.15 0.055 mg/L Sulfate N 14808-79-8 7.7 0.50 0.25 mg/L

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Analysis Method E314.0

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No. Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Perchlorate 14797-73-0 4.0 0.95 ug/L

Analysis Method E608

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Fraction: CAS No Result RLMDL Result Lab Analyte Validation Validation Value Units **Qualifier** Qualifier Notes 4,4'-DDD U 72-54-8 0.0047 0.0038 U N ug/L 4,4'-DDE N 72-55-9 0.0047 0.0028 ug/L U U 4,4'-DDT Ν 50-29-3 0.0094 0.0038 ug/L U U alpha-BHC U N 319-84-6 0.0047 0.0023 U ug/L Aroclor-1016 (PCB-1016) N 12674-11-2 UBU UJ 0.48 0.24 ug/L S Aroclor-1221 (PCB-1221) N 11104-28-2 0.48 0.24 ug/L UBU UJ S 0.24 UBU Aroclor-1232 (PCB-1232) N 11141-16-5 0.48 UJ S ug/L Aroclor-1242 (PCB-1242) 53469-21-9 UBU N 0.48 0.24 ug/L UJ S Aroclor-1248 (PCB-1248) N 12672-29-6 0.48 0.24 ug/L UBU UJ S Aroclor-1254 (PCB-1254) 0.48 0.24 UBU UJ Ν 11097-69-1 ug/L S Aroclor-1260 (PCB-1260) UBU N 11096-82-5 0.48 0.24 ug/L UJ S U Chlordane N 57-74-9 0.094 0.075 ug/L U Dieldrin N 60-57-1 0.0047 0.0019 ug/L U U Toxaphene 0.23 IJ 0.47 ug/L

Analysis Method E625

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Fraction: CAS No Result RLMDL Result Analyte Lab Validation Validation Value Units **Qualifier** Qualifier Notes 9.16 2,4,6-Trichlorophenol 88-06-2 0.153 N ug/L 2,4-Dinitrotoluene N 121-14-2 7.63 3.05 U U ug/L bis(2-Ethylhexyl)phthalate Ν 117-81-7 7.63 3.05 ug/L U U U U N-Nitrosodimethylamine N 62-75-9 7.63 0.458 ug/L U Pentachlorophenol N 87-86-5 7.63 1.53 U ug/L

Tuesday, February 5, 2019 Page 3 of 5

EPA-821-R-02-013 Analysis Method

Sample Name OUTFALL002 20181207 COMP Result Type: TRG Matrix Type:

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Chronic Toxicity, Selenastrum CHRTOXSELEN -19.66 % SURV

Analysis Method SM2340

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

440-226838-1 Lab Sample Name:

Fraction: CAS No RLMDL Analyte Result Result Lab Validation Validation Value Units **Qualifier** Qualifier Notes Hardness as CaCO3 HARDNESSCA 300 0.33 0.17 mg/L

Sample Name OUTFALL002 20181207 COMP F Matrix Type: Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

440-226838-2 Lab Sample Name:

MDL **Analyte** Fraction: CAS No. Result RLResult Lab Validation Validation Value Units **Oualifier Qualifier** Notes Hardness as CaCO3 HARDNESSCA 0.33 0.17 mg/L CO3

Analysis Method SM2540C

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

440-226838-1 Lab Sample Name:

Analyte Fraction: CAS No Result RL**MDL** Result Lab Validation Validation Value Units **Qualifier** Qualifier Notes Total Dissolved Solids (TDS) TDS 250 10 5.0 mg/L

SM2540D Analysis Method

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

440-226838-1 Lab Sample Name:

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Total Suspended Solids (TSS) TSS 340 67 33 mg/L

Tuesday, February 5, 2019 Page 4 of 5 Analysis Method SM4500-CN-E

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Cyanide 57-12-5 5.0 2.5 Н ug/L

Analysis Method SM4500-NH3G

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Fraction: CAS No Result RLMDL Result **Analyte** Lab Validation Validation Value Units **Qualifier Qualifier** Notes Ammonia (as N) 7664-41-7N 0.264 0.200 0.100 mg/L

Analysis Method SM5210B

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

MDL Analyte Fraction: CAS No Result RLResult Lab Validation Validation Value Units Qualifier Qualifier Notes Biochemical Oxygen Demand BOD 3.7 2.0 0.50 mg/L

Analysis Method SM5540

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 8

Lab Sample Name: 440-226838-1

Analyte Fraction: CAS No Result RL**MDL** Result Lab Validation Validation Value Units Qualifier Qualifier Notes Surfactants as MBAS SURFASMBAS 0.10 0.050 mg/L Q, Q1

Tuesday, February 5, 2019 Page 5 of 5



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226838-1

Client Project/Site: Quarterly Outfall 002 Comp

Revision: 3

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

lsli fatel

Authorized for release by: 1/24/2019 8:06:08 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ······

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Total Access

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Usli fatel

1/24/2019 8:06:08 PM

Manager of Project Management

Urvashi Patel

TestAmerica Job ID: 440-226838-1

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

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Sample Summary

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226838-1	Outfall002_20181207_Comp	Water	12/07/18 10:05 1	12/07/18 21:05
440-226838-2	Outfall002_20181207_Comp_F	Water	12/07/18 10:05 1	12/07/18 21:05

Case Narrative

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Tojecrone: Quarterly Outlan 602 Comp

Job ID: 440-226838-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-226838-1

Comments

Revision created to add dissolved Iron.

Revision created to adjust Pest analyte list per client request (see client email) and to add Toxaphene.

Revision created to remove one email correspondence from final report per client request.

Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 2.9° C.

Receipt Exceptions

Outfall002_20181207_Comp_F (440-226838-2)-Received only containers for metals

client had requested dissolved iron via email and method was cancelled at final review since it was not on the COC. client email was attached which was missed.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-518465 and analytical batch 440-518537. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch. (LCS 440-518465/2-A)

Method(s) 608: Surrogate recovery for the following sample was outside control limits: Outfall002_20181207_Comp (440-226838-1). Evidence of matrix interference is present, emulsion during extraction process; therefore, re-extraction and re-analysis was not performed.

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-516165 and analytical batch 440-516104. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch: (LCS 440-516165/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

Method(s) 200.8: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-517388 and analytical batch 440-517466 were outside control limits for Selenium. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) FILTRATION: The following samples requested dissolved metals and were not filtered in the field:

Outfall002 20181207 Comp F (440-226838-2). These samples were filtered and preserved upon receipt to the laboratory.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) SM 5540C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 440-515808 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

TestAmerica Job ID: 440-226838-1

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TestAmerica Irvine 1/24/2019 (Rev. 3)

Case Narrative

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Job ID: 440-226838-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) SM 5540C: The matrix spike / matrix spike duplicate (MS/MSD) precision for analytical batch 440-515808 was outside control limits. Sample matrix interference is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 3510C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510-8015B preparation batch 440-516165.

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C 8082 PCB preparation batch 440-518465.

Method(s) 3520C, 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3520C_8270C/625-LL preparation batch 440-515842.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.

Date Collected: 12/07/18 10:05

Surrogate

Tetrachloro-m-xylene

DCB Decachlorobiphenyl (Surr)

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002_20181207_Comp

TestAmerica Job ID: 440-226838-1

Lab Sample ID: 440-226838-1

Matrix: Water

Method: 625 - Semivolatile Analyte		Qualifier	(/MS)	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	— ND	- Guanner	9.16	0.153		=	•	12/12/18 02:08	
Bis(2-ethylhexyl) phthalate	ND		7.63		ug/L			12/12/18 02:08	
N-Nitrosodimethylamine	ND		7.63	0.458	Ü			12/12/18 02:08	
Pentachlorophenol	ND		7.63		ug/L			12/12/18 02:08	· · · · ·
2,4-Dinitrotoluene	ND		7.63		ug/L			12/12/18 02:08	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	99		40 - 120				12/09/18 15:53	12/12/18 02:08	-
2-Fluorobiphenyl	84		50 - 120				12/09/18 15:53	12/12/18 02:08	
2-Fluorophenol	70		30 - 120				12/09/18 15:53	12/12/18 02:08	
Nitrobenzene-d5	87		45 - 120				12/09/18 15:53	12/12/18 02:08	
Phenol-d6	84		35 - 120				12/09/18 15:53	12/12/18 02:08	
Terphenyl-d14	125		37 - 144				12/09/18 15:53	12/12/18 02:08	
Analyte Aroclor 1016	Result ND	Qualifier BU	RL 0.48	MDL 0.24	ug/L	<u>D</u>		Analyzed 12/20/18 17:52	-
Method: 608 PCB LL - Poly Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242	Result ND ND ND ND	Qualifier	RL	0.24 0.24 0.24		D	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07		
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232	Result ND ND ND ND	Qualifier BU BU BU	0.48 0.48 0.48	0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L	<u>D</u>	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52	
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242	Result ND ND ND ND ND	Qualifier BU BU BU BU	0.48 0.48 0.48 0.48	0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L	<u>D</u>	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52	1
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254	Result ND ND ND ND ND ND ND	Qualifier BU BU BU BU BU	0.48 0.48 0.48 0.48 0.48	0.24 0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L ug/L	D	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52	1
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate	Result ND	Qualifier BU BU BU BU BU BU BU COMBU BU BU BU BU BU BU BU BU	0.48 0.48 0.48 0.48 0.48 0.48	0.24 0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L ug/L ug/L	D	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed	Dil Fac
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	Result ND	Qualifier BU BU BU BU BU BU BU BU BU	0.48 0.48 0.48 0.48 0.48 0.48 0.48	0.24 0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L ug/L ug/L	<u>D</u>	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52	
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr) Method: 608 Pesticides - O	Result ND ND ND ND ND ND ND 27 rganochlorine	Qualifier BU Pesticides	0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48	MDL 0.24 0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L ug/L ug/L		12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed	Dil Fa
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr) Method: 608 Pesticides - O Analyte	Result ND ND ND ND ND ND ND 27 rganochlorine Result	Qualifier BU BU BU BU BU BU BU CONTRACTOR CO	0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48	MDL 0.24 0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L ug/L ug/L	<u>D</u>	12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed Analyzed	Dil Fa
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr) Method: 608 Pesticides - O Analyte Chlordane (technical)	Result ND ND ND ND ND ND ND PREcovery 27 Preganochlorine Result ND	Qualifier BU Pesticides	0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48	MDL 0.24 0.24 0.24 0.24 0.24 0.24	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07 Prepared 12/11/18 05:36	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed 12/20/18 17:52 Analyzed	Dil Fa
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr) Method: 608 Pesticides - O Analyte Chlordane (technical) Dieldrin	Result ND ND ND ND ND ND ND N	Qualifier BU Pesticides	0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48 Limits 29 - 115 Low level RL 0.094 0.0047	MDL 0.24 0.24 0.24 0.24 0.24 0.24 0.25 0.019	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07 Prepared 12/11/18 05:36 12/11/18 05:36	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed 12/20/18 17:52 Analyzed 12/11/18 17:09 12/11/18 17:09	Dil Fa
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr) Method: 608 Pesticides - O Analyte Chlordane (technical) Dieldrin 4,4'-DDT	Result ND ND ND ND ND ND	Qualifier BU Pesticides	RL 0.48 0.48 0.48 0.48 0.48 0.48 0.48 Limits 29 - 115 Low level RL 0.094 0.0047 0.0094	MDL 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.00 0.00	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07 Prepared 12/11/18 05:36 12/11/18 05:36 12/11/18 05:36	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed 12/20/18 17:52 Analyzed 12/11/18 17:09 12/11/18 17:09 12/11/18 17:09	Dil Fa
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr) Method: 608 Pesticides - O Analyte Chlordane (technical) Dieldrin 4,4'-DDT 4,4'-DDD	Result ND	Qualifier BU Pesticides	RL 0.48 0.48 0.48 0.48 0.48 0.48 0.48 Limits 29 - 115 Low level RL 0.094 0.0047 0.0094 0.0047	MDL 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.00 0.00	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07 Prepared 12/11/18 05:36 12/11/18 05:36 12/11/18 05:36	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed 12/20/18 17:52 Analyzed 12/11/18 17:09 12/11/18 17:09 12/11/18 17:09	Dil Fa
Analyte Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Surrogate DCB Decachlorobiphenyl (Surr)	Result ND ND ND ND ND ND	Qualifier BU Pesticides	RL 0.48 0.48 0.48 0.48 0.48 0.48 0.48 Limits 29 - 115 Low level RL 0.094 0.0047 0.0094	MDL 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.00 0.00	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 12/20/18 12:07 Prepared 12/20/18 12:07 Prepared 12/11/18 05:36 12/11/18 05:36 12/11/18 05:36 12/11/18 05:36 12/11/18 05:36	12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 12/20/18 17:52 Analyzed 12/20/18 17:52 Analyzed 12/11/18 17:09 12/11/18 17:09 12/11/18 17:09	Dil Fa

Method: 300.0 - Anions, Ion Chromatography										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	2.7		0.50	0.25	mg/L			12/08/18 11:46	1	
Nitrate as N	1.4		0.11	0.055	mg/L			12/08/18 11:46	1	
Nitrite as N	0.025	J,DX	0.15	0.025	mg/L			12/08/18 11:46	1	
Sulfate	7.7		0.50	0.25	mg/L			12/08/18 11:46	1	

Limits

10 - 150

18 - 134

%Recovery Qualifier

69

78

Method: 314.0 - Perchlorate (IC	C)							
Analyte	Result Qu	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND	4.0	0.95	ug/L			12/11/18 11:38	1

TestAmerica Irvine

Prepared

<u>12/11/18 05:36</u> <u>12/11/18 17:09</u>

12/11/18 05:36 12/11/18 17:09

Analyzed

Dil Fac

Client Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

TestAmerica Job ID: 440-226838-1

Lab Sample ID: 440-226838-1

Client Sample ID: Outfall002 20181207 Comp Date Collected: 12/07/18 10:05 **Matrix: Water**

Date Received: 12/07/18 21:05

Analyte	Result Qualifier	KL	MDL	Unit	U	Prepared	Analyzed	DII Fac
Nitrate Nitrite as N	1.4	0.15	0.055	mg/L			12/18/18 14:54	1
- Method: 200.7 Rev 4.4 - M	letals (ICP) - Total Recovera	ble						
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	98000	100	50	ug/L		12/16/18 11:30	12/17/18 10:15	1
Zinc	430	20	12	ug/L		12/16/18 11:30	12/17/18 10:15	1
Method: 200.7 Rev 4.4 - M Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte					D			Dil Fac
Iron	0.36	0.10	0.050	mg/L		12/24/18 13:29	12/26/18 13:59	1
Method: 200.8 - Metals (IC	P/MS) - Total Recoverable							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	1.6	1.0	0.25	ug/L		12/16/18 11:26	12/16/18 19:34	1
				-				

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	1.6		1.0	0.25	ug/L		12/16/18 11:26	12/16/18 19:34	1
Copper	52		2.0	0.50	ug/L		12/16/18 11:26	12/16/18 19:34	1
Lead	88		1.0	0.50	ug/L		12/16/18 11:26	12/16/18 19:34	1
Selenium	11		2.0	0.50	ug/L		12/16/18 11:26	12/16/18 19:34	1
Method: 245 1 Moreum	(CVAA)								

Method: 245.1 - Mercury (CVAA)						
Analyte	Result Qualifier	RL	MDL Unit	D Prepared	Analyzed	Dil Fac
Mercury	ND	0.20	0.10 ug/L	12/13/18 13:	26 12/13/18 22:24	1

	Method: SM 2340B - Total Hard	dness (as C	aCO3) by	calculatio	n - Total R	ecove	rable			
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Į	Hardness, as CaCO3	300		0.33	0.17	mg/L			12/31/18 14:40	1

General Chemistry Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	2500		40		NTU			12/09/18 09:15	400
Total Dissolved Solids	250		10	5.0	mg/L			12/14/18 09:17	1
Total Suspended Solids	340		67	33	mg/L			12/14/18 08:46	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/21/18 19:14	12/21/18 23:47	1
Ammonia (as N)	0.264		0.200	0.100	mg/L			12/19/18 15:11	1
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			12/09/18 07:19	1
Biochemical Oxygen Demand	3.7		2.0	0.50	mg/L			12/08/18 17:30	1

Lab Sample ID: 440-226838-2 Client Sample ID: Outfall002_20181207_Comp_F

Date Collected: 12/07/18 10:05 Date Received: 12/07/18 21:05

Method: 200.7 Rev 4.4 - Metals (CP) - Dissolved							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	20	12	ug/L		12/12/18 13:14	12/12/18 17:52	1
Method: 200.8 - Metals (ICP/MS) Analyte	- Dissolved Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

Method: 200.0 - Metals (101 /1	io) - Dissolved					
Analyte	Result Qualifier	RL	MDL Unit	D Prepared	Analyzed	Dil Fac
Cadmium	ND	1.0	0.25 ug/L	12/12/18 13:17	12/13/18 13:07	1
Copper	2.6	2.0	0.50 ug/L	12/12/18 13:17	12/13/18 13:07	1
Lead	ND	1.0	0.50 ug/L	12/12/18 13:17	12/13/18 13:07	1
Selenium	ND	2.0	0.50 ug/L	12/12/18 13:17	12/13/18 13:07	1

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TestAmerica Irvine

Matrix: Water

Client Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Lab Sample ID: 440-226838-2

Matrix: Water

Client Sample ID: Outfall002_20181207_Comp_F Date Collected: 12/07/18 10:05

Date Received: 12/07/18 21:05

Method: 245.1 - Mercury (CVA	AA) - Dissolved						
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND ND	0.20	0.10 ug/L		12/11/18 11:36	12/11/18 19:14	1

Method: SM 2340B - Total Hai	dness (as CaCO3) by ca	Iculation -	Dissolved				
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	54	0.33	0.17 mg/L			12/31/18 14:41	

Method Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
EPA	Bioassay	EPA	ABC
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV
625	Liquid-Liquid Extraction	40CFR136A	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002_20181207_Comp

Date Collected: 12/07/18 10:05 Date Received: 12/07/18 21:05

Lab Sample ID: 440-226838-1

Matrix: Water

Prep Type
Total/NA Analysis 625 1 516279 12/12/18 02:08 HN TAL IRV Total/NA Prep 608 1045 mL 2 mL 518465 12/20/18 12:07 HCK TAL IRV Total/NA Analysis 608 PCB LL 1 518537 12/20/18 17:52 JM TAL IRV Total/NA Prep 608 1065 mL 2 mL 516165 12/11/18 05:36 L1H TAL IRV Total/NA Analysis 608 Pesticides 1 516104 12/11/18 05:36 L1H TAL IRV Total/NA Analysis 300.0 1 515764 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved F
Total/NA Prep 608 1045 mL 2 mL 518465 12/20/18 12:07 HCK TAL IRV Total/NA Analysis 608 PCB LL 1 518537 12/20/18 17:52 JM TAL IRV Total/NA Prep 608 1065 mL 2 mL 516165 12/11/18 05:36 L1H TAL IRV Total/NA Analysis 608 Pesticides 1 516104 12/11/18 17:09 D1D TAL IRV Total/NA Analysis 300.0 1 515764 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE
Total/NA Analysis 608 PCB LL 1 518537 12/20/18 17:52 JM TAL IRV Total/NA Prep 608 1065 mL 2 mL 516165 12/11/18 05:36 L1H TAL IRV Total/NA Analysis 608 Pesticides 1 516104 12/11/18 17:09 D1D TAL IRV Total/NA Analysis 300.0 1 515764 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519322 12/26/18 13:59 VS TAL IRV
Total/NA Prep 608 1065 mL 2 mL 516165 12/11/18 05:36 L1H TAL IRV Total/NA Analysis 608 Pesticides 1 516104 12/11/18 17:09 D1D TAL IRV Total/NA Analysis 300.0 1 515764 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL I
Total/NA Analysis 608 Pesticides 1 516104 12/11/18 17:09 D1D TAL IRV Total/NA Analysis 300.0 1 515764 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519372 12/16/18 11:30 KE TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL
Total/NA Analysis 300.0 1 515764 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 519372 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS
Total/NA Analysis 300.0 1 515765 12/08/18 11:46 OH1 TAL IRV Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Dissolved Analysis 200.7 Rev 4.4 1 510 mL 51832 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/26/18 13:59 VS TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 510 mL 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.8 1 517388 12/16/18 11:26 KE TAL IRV Total/NA Prep 245.1 20 mL 516687 12/16/18 19:34 B1H TAL IRV Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 510206 12/31/18 14:40 A1S TAL IRV
Total/NA Analysis 314.0 1 516202 12/11/18 11:38 CTH TAL IRV Total/NA Analysis NO3NO2 Calc 1 516202 12/11/18 11:38 CTH TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Dissolved Analysis 200.7 Rev 4.4 1 519372 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34
Total/NA Analysis NO3NO2 Calc 1 517960 12/18/18 14:54 TLN TAL IRV Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Dissolved Analysis 200.7 Rev 4.4 1 519372 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12
Dissolved Filtration FILTRATION 150 mL 150 mL 518440 12/20/18 11:12 KE TAL IRV Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Dissolved Analysis 200.7 Rev 4.4 1 519372 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total Recoverable Analysis 245.1 1 510206
Dissolved Prep 200.2 25 mL 25 mL 519128 12/24/18 13:29 BV TAL IRV Dissolved Analysis 200.7 Rev 4.4 1 519372 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total Recoverable Analysis 245.1 1 517219 12/13/18 14:40 A1S TAL IRV
Dissolved Analysis 200.7 Rev 4.4 1 519372 12/26/18 13:59 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total Recoverable Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total Recoverable Prep 200.2 25 mL 25 mL 517392 12/16/18 11:30 KE TAL IRV Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total Recoverable Analysis 200.7 Rev 4.4 1 518714 12/17/18 10:15 VS TAL IRV Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total Recoverable Prep 200.2 25 mL 25 mL 517388 12/16/18 11:26 KE TAL IRV Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total Recoverable Analysis 200.8 1 517466 12/16/18 19:34 B1H TAL IRV Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total/NA Prep 245.1 20 mL 20 mL 516687 12/13/18 13:26 DB TAL IRV Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total/NA Analysis 245.1 1 517219 12/13/18 22:24 DB TAL IRV Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total Recoverable Analysis SM 2340B 1 520206 12/31/18 14:40 A1S TAL IRV
Total/NA Analysis 180.1 400 515813 12/09/18 09:15 CMM TAL IRV
Total/NA Analysis SM 2540C 1 100 mL 100 mL 517079 12/14/18 09:17 XL TAL IRV
Total/NA Analysis SM 2540D 1 15 mL 1000 mL 517087 12/14/18 08:46 XL TAL IRV
Total/NA Prep Distill/CN 50 mL 518834 12/21/18 19:14 QTN TAL IRV
Total/NA Analysis SM 4500 CN E 1 518850 12/21/18 23:47 QTN TAL IRV
Total/NA Analysis SM 4500 NH3 G 1 0.8 mL 8.0 mL 518382 12/19/18 15:11 KMY TAL IRV
Total/NA Analysis SM 5540C 1 100 mL 100 mL 515808 12/09/18 07:19 KMY TAL IRV
Total/NA Analysis SM5210B 1 515805 12/08/18 17:30 KYP TAL IRV

Client Sample ID: Outfall002_20181207_Comp_F

Date Received: 12/07/18 21:05

Lab Sample ID: 440-226838-2 Date Collected: 12/07/18 10:05 **Matrix: Water**

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	515802	12/08/18 16:39	KE	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	516574	12/12/18 13:14	KE	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			516674	12/12/18 17:52	P1R	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	515802	12/08/18 16:39	KE	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	516575	12/12/18 13:17	KE	TAL IRV
Dissolved	Analysis	200.8		1			516916	12/13/18 13:07	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	515802	12/08/18 16:39	KE	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	516137	12/11/18 11:36	DB	TAL IRV
Dissolved	Analysis	245.1		1			516542	12/11/18 19:14	DB	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Analysis	SM 2340B		1			520207	12/31/18 14:41	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-515842/1-A

Matrix: Water

Analysis Batch: 516279

Client Sample ID: Method Blank **Prep Type: Total/NA**

Prep Batch: 515842

	MB	MR							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		12/09/18 15:53	12/11/18 13:42	1
N-Nitrosodimethylamine	ND		5.00	0.300	ug/L		12/09/18 15:53	12/11/18 13:42	1
Pentachlorophenol	ND		5.00	1.00	ug/L		12/09/18 15:53	12/11/18 13:42	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		12/09/18 15:53	12/11/18 13:42	1

MB MB

1					
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	81	40 - 120	12/09/18 15:53	12/11/18 13:42	1
2-Fluorobiphenyl	76	50 - 120	12/09/18 15:53	12/11/18 13:42	1
2-Fluorophenol	67	30 - 120	12/09/18 15:53	12/11/18 13:42	1
Nitrobenzene-d5	78	45 - 120	12/09/18 15:53	12/11/18 13:42	1
Phenol-d6	76	35 - 120	12/09/18 15:53	12/11/18 13:42	1
Terphenyl-d14	98	37 - 144	12/09/18 15:53	12/11/18 13:42	1
_					

Lab Sample ID: LCS 440-515842/2-A

Matrix: Water

Analysis Batch: 516279

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Prep Batch: 515842

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	8.220		ug/L		82	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	9.257		ug/L		93	10 - 150
N-Nitrosodimethylamine	10.0	8.208		ug/L		82	26 - 117
Pentachlorophenol	20.0	16.01		ug/L		80	14 - 150

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	90		40 - 120
2-Fluorobiphenyl	77		50 - 120
2-Fluorophenol	61		30 - 120
Nitrobenzene-d5	74		45 - 120
Phenol-d6	73		35 - 120
Terphenyl-d14	93		37 - 144

Lab Sample ID: LCSD 440-515842/3-A

Matrix: Water

Analysis Batch: 516279

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 515842

•	Spike	LCSD	LCSD				%Rec.		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
2,4,6-Trichlorophenol	10.0	7.197		ug/L		72	37 - 144	13	35	
Bis(2-ethylhexyl) phthalate	10.0	9.150		ug/L		92	10 - 150	1	35	
N-Nitrosodimethylamine	10.0	7.657		ug/L		77	26 - 117	7	35	
Pentachlorophenol	20.0	14.87		ug/L		74	14 - 150	7	35	

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	84		40 - 120
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	70		30 - 120
Nitrobenzene-d5	74		45 - 120

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-515842/3-A

Matrix: Water

Analysis Batch: 516279

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 515842

LCSD LCSD

%Recovery Qualifier Surrogate Limits Phenol-d6 72 35 - 120 Terphenyl-d14 95 37 - 144

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-518465/1-A

Matrix: Water

Analysis Batch: 518537

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 518465

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1
Aroclor 1221	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1
Aroclor 1232	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1
Aroclor 1242	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1
Aroclor 1248	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1
Aroclor 1254	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1
Aroclor 1260	ND		0.50	0.25	ug/L		12/20/18 12:07	12/20/18 17:12	1

MB MB

%Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac DCB Decachlorobiphenyl (Surr) 29 - 115 12/20/18 12:07 12/20/18 17:12 71

LCS LCS

LCSD LCSD

2.71

3.00

Result Qualifier

Unit

ug/L

ug/L

Lab Sample ID: LCS 440-518465/2-A

Matrix: Water

Analysis Batch: 518537

Client Sample ID: Lab Control Sample Prep Type: Total/NA Prep Batch: 518465

%Rec. Limits

Analyte Added Result Qualifier Unit %Rec Aroclor 1016 4.00 2.71 ug/L 68 10 - 127 Aroclor 1260 4.00 2.97 ug/L 74 50 - 115

Spike

Spike

Added

4.00

4.00

LCS LCS

%Recovery Qualifier Limits Surrogate DCB Decachlorobiphenyl (Surr) 29 - 115 66

Lab Sample ID: LCSD 440-518465/3-A

Matrix: Water

Analyte

Aroclor 1016

Aroclor 1260

Analysis Batch: 518537

Client Sample ID: Lab Control Sample Dup

75

Prep Type: Total/NA Prep Batch: 518465

30

%Rec. **RPD** %Rec Limits RPD Limit 68 10 - 127 0 30

50 - 115

LCSD LCSD

Surrogate %Recovery Qualifier Limits DCB Decachlorobiphenyl (Surr) 29 - 115 66

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-516165/1-A Client Sample ID: Method Blank **Matrix: Water Prep Type: Total/NA** Analysis Batch: 516104 **Prep Batch: 516165** MD MD

	IVID	VID.							
Analyte	Result (Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		12/11/18 05:36	12/11/18 15:54	1
Dieldrin	ND		0.0050	0.0020	ug/L		12/11/18 05:36	12/11/18 15:54	1
4,4'-DDT	ND		0.010	0.0040	ug/L		12/11/18 05:36	12/11/18 15:54	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		12/11/18 05:36	12/11/18 15:54	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		12/11/18 05:36	12/11/18 15:54	1
Toxaphene	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 15:54	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	73		10 - 150	12/11/18 05:36	12/11/18 15:54	1
DCB Decachlorobiphenvl (Surr)	98		18 - 134	12/11/18 05:36	12/11/18 15:54	1

Lab Sample ID: LCS 440-516165/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA**

Analysis Batch: 516104	Spike	LCS	LCS				Prep Batch: 516165 %Rec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
alpha-BHC	0.200	0.142		ug/L		71	37 - 134
gamma-BHC (Lindane)	0.200	0.142		ug/L		71	32 - 127
Endrin aldehyde	0.200	0.151		ug/L		76	47 - 115
delta-BHC	0.200	0.145		ug/L		73	19 - 140
Aldrin	0.200	0.149		ug/L		74	42 - 122
Endosulfan sulfate	0.200	0.156		ug/L		78	26 - 144
Endosulfan I	0.200	0.154		ug/L		77	45 - 150
Endrin	0.200	0.160		ug/L		80	30 - 147
Dieldrin	0.200	0.156		ug/L		78	36 - 146
4,4'-DDT	0.200	0.159		ug/L		79	25 - 150
Endosulfan II	0.200	0.155		ug/L		77	10 - 150
beta-BHC	0.200	0.149		ug/L		74	17 - 147
4,4'-DDD	0.200	0.159		ug/L		79	31 - 141
4,4'-DDE	0.200	0.153		ug/L		77	30 - 145
Heptachlor	0.200	0.150		ua/L		75	34 ₋ 115

0.200

0.153

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Tetrachloro-m-xylene	66		10 - 150
DCB Decachlorobiphenyl (Surr)	82		18 - 134

Lab Sample ID: LCSD 440-516165/3-A

Heptachlor epoxide

Lab Sample ID. LCSD 440-310103/3-A			•	Ment 36	annbie	ID. Lak		Sample	, Dup
Matrix: Water							Prep Ty	e: Tot	al/NA
Analysis Batch: 516104							Prep Ba	itch: 51	6165
-	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	0.200	0.156		ug/L		78	37 - 134	10	35
gamma-BHC (Lindane)	0.200	0.156		ug/L		78	32 - 127	10	35
Endrin aldehyde	0.200	0.168		ug/L		84	47 - 115	11	35
delta-BHC	0.200	0.160		ug/L		80	19 - 140	10	35
Aldrin	0.200	0.163		ug/L		82	42 - 122	9	35

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Client Sample ID: Lab Control Sample Dun

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCSD 440-516165/3-A

Matrix: Water

Analysis Batch: 516104

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 516165

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Endosulfan sulfate	0.200	0.173		ug/L		86	26 - 144	10	35
Endosulfan I	0.200	0.169		ug/L		85	45 - 150	9	35
Endrin	0.200	0.175		ug/L		88	30 - 147	9	35
Dieldrin	0.200	0.172		ug/L		86	36 - 146	9	35
4,4'-DDT	0.200	0.178		ug/L		89	25 - 150	11	35
Endosulfan II	0.200	0.170		ug/L		85	10 - 150	10	35
beta-BHC	0.200	0.164		ug/L		82	17 - 147	10	35
4,4'-DDD	0.200	0.174		ug/L		87	31 - 141	9	35
4,4'-DDE	0.200	0.168		ug/L		84	30 - 145	9	35
Heptachlor	0.200	0.166		ug/L		83	34 - 115	10	35

0.168

0.200

ug/L

LCSD LCSD

MB MB

ND

ND

Result Qualifier

%Recovery Qualifier Limits Surrogate Tetrachloro-m-xylene 73 10 - 150 DCB Decachlorobiphenyl (Surr) 91 18 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-515764/6

Matrix: Water

Analyte

Nitrate as N

Nitrite as N

Heptachlor epoxide

Analysis Batch: 515764

Client Sample ID: Method Blank Prep Type: Total/NA

Analyzed

12/08/18 10:50

12/08/18 10:50

Prepared

Client Sample ID: Matrix Spike Duplicate

Client Sample ID: Matrix Spike

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10

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Lab Sample ID: LCS 440-515764/5

Matrix: Water

Analysis Batch: 515764								
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	1.13	1.15		mg/L		102	90 - 110	
Nitrite as N	1.52	1.50		mg/L		99	90 - 110	

RL

0.11

0.15

MDL Unit

0.055 mg/L

0.025 mg/L

Lab Sample ID: 440-226822-A-1 MS

Matrix: Water

Analysis Batch: 515764

Analysis Daten. 515704	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	0.96		1.13	2.19		mg/L		108	80 - 120	
Nitrite as N	ND		1.52	1.56		mg/L		102	80 - 120	

Lab Sample ID: 440-226822-A-1 MSD

Matrix: Water

Analysis Batch: 515764											
-	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nitrate as N	0.96		1.13	2.21		mg/L		110	80 - 120		20

TestAmerica Irvine

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Dil Fac

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Client Sample ID: Matrix Spike

Client Sample ID: Matrix Spike Duplicate

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Client Sample ID: Matrix Spike Duplicate

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-226822-A-1 MSD

Matrix: Water

Analysis Batch: 515764

MSD MSD **RPD** Sample Sample Spike %Rec. Result Qualifier Added Analyte Result Qualifier Unit D %Rec Limits RPD Limit Nitrite as N ND 1.52 1.58 104 80 - 120 mg/L

Lab Sample ID: MB 440-515765/6

Matrix: Water

Analysis Batch: 515765

Prep Type: Total/NA

MB MB Analyte Result Qualifier RL **MDL** Unit **Prepared** Analyzed Dil Fac Chloride ND 0.50 0.25 mg/L 12/08/18 10:50 Sulfate ND 0.50 12/08/18 10:50 0.25 mg/L

Lab Sample ID: LCS 440-515765/5

Matrix: Water

Analysis Batch: 515765

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Chloride 5.00 4.96 mg/L 99 90 - 110 Sulfate 5.00 95 4.77 mg/L 90 - 110

Lab Sample ID: 440-226822-A-1 MS

Matrix: Water

Analysis Batch: 515765

, ,	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	2.5		5.00	7.59		mg/L		103	80 - 120	
Sulfate	2.7		5.00	7.76		mg/L		101	80 - 120	

Lab Sample ID: 440-226822-A-1 MSD

Matrix: Water

Analysis Batch: 515765

, ,	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	2.5		5.00	7.66		mg/L		104	80 - 120	1	20
Sulfate	2.7		5.00	7.83		mg/L		102	80 - 120	1	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-516202/6

Matrix: Water

Analysis Batch: 516202

	IVID	IVID								
Analyte	Result	Qualifier	RL	MDL	Unit	1	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L				12/11/18 09:26	1

Lab Sample ID: LCS 440-516202/5

Matrix: Water

Analysis Batch: 516202								
-	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	25.0	28.1		ug/L		112	85 - 115	

TestAmerica Irvine

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Comp

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-516202/4 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 516202

Spike MRL MRL %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 1.00 Perchlorate 1.14 J,DX ug/L 114 75 - 125

Lab Sample ID: 440-226822-A-1 MS Client Sample ID: Matrix Spike **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 516202

Sample Sample Spike MS MS %Rec. Result Qualifier Added Analyte Result Qualifier Limits Unit %Rec Perchlorate ND 25.0 28.2 ug/L 113 80 - 120

Lab Sample ID: 440-226822-A-1 MSD **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 516202

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier Limits RPD Limit Analyte Unit D %Rec Perchlorate ND 25.0 28.2 ug/L 80 - 120 113

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-517392/1-A **Client Sample ID: Method Blank Matrix: Water Prep Type: Total Recoverable**

Analysis Batch: 518714

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	12	ug/L		12/16/18 11:30	12/17/18 09:33	1
Iron	ND		100	50	ug/L		12/16/18 11:30	12/17/18 09:33	1

Lab Sample ID: LCS 440-517392/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total Recoverable** Analysis Batch: 518714 **Prep Batch: 517392**

Spike LCS LCS %Rec. Analyte Added Result Qualifier Limits Unit D %Rec Zinc 500 496 ug/L 99 85 - 115 2500 2500 Calcium ug/L 100 85 - 115 Magnesium 2500 2470 ug/L 99 85 - 115 Iron 500 494 ug/L 99 85 - 115

Lab Sample ID: 440-226838-1 MS Client Sample ID: Outfall002_20181207_Comp **Matrix: Water Prep Type: Total Recoverable**

Analysis Batch: 518714 **Prep Batch: 517392** Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Zinc 430 500 957 ug/L 106 70 - 130 60000 2500 65300 BB 208 Calcium ug/L 70 - 130

38000 2500 232 Magnesium 43300 BB ug/L 70 - 130 98000 500 111000 BB 2552 Iron ug/L 70 - 130

TestAmerica Irvine

Prep Batch: 517392

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-226838-1 MSD Matrix: Water Analysis Batch: 518714					Clie	nt Samp			1002_2018 pe: Total I Prep Ba	rable		
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Zinc	430		500	957		ug/L		106	70 - 130	0	20	
Calcium	60000		2500	67000	BB	ug/L		278	70 - 130	3	20	
Magnesium	38000		2500	43800	BB	ug/L		253	70 - 130	1	20	
Iron	98000		500	109000	BB	ug/L		2232	70 - 130	1	20	

Lab Sample ID: MB 440-515802/1-F **Client Sample ID: Method Blank Matrix: Water Prep Type: Dissolved Analysis Batch: 516674 Prep Batch: 516574** MB MB Analyte Result Qualifier RL MDL Unit **Prepared** Analyzed Zinc 20 <u>12/12/18 13:13</u> <u>12/12/18 17:40</u> ND 12 ug/L

Lab Sample ID: LCS 440-515802/2-F	Client Sample ID: Lab Control Sampl								
Matrix: Water							Prep Type	e: Dissolved	
Analysis Batch: 516674							Prep Ba	tch: 516574	
	Spike	LCS	LCS				%Rec.		
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Zinc	500	486		ug/L		97	85 - 115		
Calcium	2.50	2.45		mg/L		98	85 - 115		
Magnesium	2.50	2.44		mg/L		98	85 - 115		

Lab Sample ID: 440-226822-B-2-J MS **Client Sample ID: Matrix Spike Matrix: Water Prep Type: Dissolved Analysis Batch: 516674 Prep Batch: 516574** Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits Zinc 476 ug/L ND 500 95 70 - 130

Calcium 4.5 2.50 6.91 mg/L 96 70 - 130 Magnesium 1.3 2.50 3.68 mg/L 94 70 - 130 Lab Sample ID: 440-226822-B-2-K MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water Prep Type: Dissolved**

Analysis Batch: 516674										Prep B	atch: 51	16574	
-	Sample	Sample	Spike	MSD	MSD					%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit		D	%Rec	Limits	RPD	Limit	
Zinc	ND		500	472		ug/L		_	94	70 - 130	1	20	
Calcium	4.5		2.50	6.89		mg/L			95	70 - 130	0	20	
Magnesium	1.3		2.50	3.69		mg/L			94	70 - 130	0	20	
	Zinc Calcium	Analyte Result Zinc ND Calcium 4.5	$ \begin{array}{c c} \textbf{Sample} & \textbf{Sample} \\ \textbf{Analyte} & \textbf{Result} \\ \hline \textbf{Zinc} & \textbf{ND} \\ \hline \textbf{Calcium} & 4.5 \\ \end{array} $	Analyte Sample Result Zinc Sample Qualifier Added Added Added Added Added Sinc Sinc Sinc Sinc Sinc Sinc Sinc Sinc	Analyte Result Zinc ND 4.5 Spike Added Qualifier MSD Added A	Analyte Result Zinc ND 4.5 MSD Qualifier Added Result Qualifier Added A72 A72 <t< td=""><td>Analyte Result Zinc ND 45 Spike Added Spike Added MSD Result Qualifier Unit Qualifier Added Result Qualifier Unit Qualifier Unit Qualifier Zinc ND 500 472 ug/L Calcium 4.5 2.50 6.89 mg/L</td><td>Analyte Result Zinc Qualifier ND Added Scale Added Action MSD MSD Added Result Added Added Action WSD MSD Added Ad</td><td>Analyte Result Zinc ND Analyte Added Result aug/L MSD <t< td=""><td>Analyte Result Zinc ND Analyte MSD MSD</td><td>Analyte Result Zinc ND Analyte MSD MSD WSD WRec. WRec. WRec. MRec. <t< td=""><td>Analyte Result Zinc ND Spike Added Added Result Spike Res</td><td>Analyte Result Zinc ND Added Sold Sold Sold Sold Sold Sold Sold Sol</td></t<></td></t<></td></t<>	Analyte Result Zinc ND 45 Spike Added Spike Added MSD Result Qualifier Unit Qualifier Added Result Qualifier Unit Qualifier Unit Qualifier Zinc ND 500 472 ug/L Calcium 4.5 2.50 6.89 mg/L	Analyte Result Zinc Qualifier ND Added Scale Added Action MSD MSD Added Result Added Added Action WSD MSD Added Ad	Analyte Result Zinc ND Analyte Added Result aug/L MSD MSD <t< td=""><td>Analyte Result Zinc ND Analyte MSD MSD</td><td>Analyte Result Zinc ND Analyte MSD MSD WSD WRec. WRec. WRec. MRec. <t< td=""><td>Analyte Result Zinc ND Spike Added Added Result Spike Res</td><td>Analyte Result Zinc ND Added Sold Sold Sold Sold Sold Sold Sold Sol</td></t<></td></t<>	Analyte Result Zinc ND Analyte MSD MSD	Analyte Result Zinc ND Analyte MSD MSD WSD WRec. WRec. WRec. MRec. MRec. <t< td=""><td>Analyte Result Zinc ND Spike Added Added Result Spike Res</td><td>Analyte Result Zinc ND Added Sold Sold Sold Sold Sold Sold Sold Sol</td></t<>	Analyte Result Zinc ND Spike Added Added Result Spike Res	Analyte Result Zinc ND Added Sold Sold Sold Sold Sold Sold Sold Sol

Lab Sample ID: MB 440-518440/1-C **Client Sample ID: Method Blank Matrix: Water Prep Type: Dissolved Analysis Batch: 519372** Prep Batch: 519128

MB MB Analyte Result Qualifier RL **MDL** Unit Dil Fac Prepared Analyzed Iron 0.10 0.050 mg/L 12/24/18 13:29 12/26/18 13:54 $\overline{\mathsf{ND}}$

TestAmerica Irvine

Limits

%Rec

Client: Haley & Aldrich, Inc.

Analyte

Project/Site: Quarterly Outfall 002 Comp

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Result Qualifier

Lab Sample ID: LCS 440-518440/2-C **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved Analysis Batch: 519372 Prep Batch: 519128** Spike LCS LCS %Rec.

Added Result Qualifier Unit %Rec Limits **Analyte** 0.500 85 - 115 0.492 mg/L 98 Iron

Added

Lab Sample ID: 440-226838-1 MS Client Sample ID: Outfall002 20181207 Comp **Matrix: Water Prep Type: Dissolved Prep Batch: 519128** Analysis Batch: 519372 Sample Sample Spike MS MS %Rec.

Iron 0.36 0.500 0.912 mg/L 111 70 - 130 Lab Sample ID: 440-226838-1 MSD Client Sample ID: Outfall002_20181207_Comp **Matrix: Water Prep Type: Dissolved Analysis Batch: 519372** Prep Batch: 519128

Result Qualifier

Unit

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier Limits RPD Limit Analyte Unit D %Rec 0.36 0.500 0.950 119 70 - 130 20 Iron mg/L

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-517388/1-A **Client Sample ID: Method Blank Matrix: Water Prep Type: Total Recoverable**

Analysis Batch: 517466 Prep Batch: 517388 MB MB **MDL** Unit Prepared Dil Fac Analyte Result Qualifier RL Analyzed

Cadmium ND 1.0 0.25 12/16/18 11:26 12/16/18 19:01 ug/L Copper ND 2.0 0.50 ug/L 12/16/18 11:26 12/16/18 19:01 Lead ND 1.0 0.50 ug/L 12/16/18 11:26 12/16/18 19:01 2.0 12/16/18 11:26 12/16/18 19:01 Selenium ND 0.50 ug/L

Lab Sample ID: LCS 440-517388/2-A **Client Sample ID: Lab Control Sample Prep Type: Total Recoverable Matrix: Water Analysis Batch: 517466 Prep Batch: 517388**

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Cadmium 80.0 77.9 ug/L 97 85 - 115 Copper 80.0 78.8 ug/L 98 85 - 115 Lead 80.0 77.6 ug/L 97 85 - 115 Selenium 80.0 78.4 ug/L 98 85 - 115

Lab Sample ID: 440-226838-1 MS Client Sample ID: Outfall002 20181207 Comp **Matrix: Water Prep Type: Total Recoverable Analysis Batch: 517466** Prep Batch: 517388

MS MS %Rec. Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits Cadmium 1.6 80.0 79.4 ug/L 97 70 - 130 52 80.0 118 82 70 - 130 Copper ug/L 88 80.0 Lead 166 ug/L 98 70 - 130Selenium 11 80.0 40.8 LN ug/L 37 70 - 130

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-226838-1 MSD Client Sample ID: Outfall002_20181207_Comp **Matrix: Water Prep Type: Total Recoverable** Analysis Batch: 517466 Prep Batch: 517388 Sample Sample Spike MSD MSD %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Cadmium 1.6 80.0 82.2 ug/L 70 - 130 3 20 101 52 80.0 119 70 - 130 20 Copper ug/L 84 Lead 88 80.0 168 ug/L 100 70 - 130 20 Selenium 11 80.0 42.6 LN 40 70 - 130 20 ug/L

Lab Sample ID: MB 440-515802/1-G **Client Sample ID: Method Blank Prep Type: Dissolved**

Matrix: Water

Analysis Batch: 516916

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Cadmium	ND		1.0	0.25	ug/L		12/12/18 13:17	12/13/18 13:02	1	
Copper	ND		2.0	0.50	ug/L		12/12/18 13:17	12/13/18 13:02	1	
Lead	ND		1.0	0.50	ug/L		12/12/18 13:17	12/13/18 13:02	1	
Selenium	ND		2.0	0.50	ug/L		12/12/18 13:17	12/13/18 13:02	1	

Lab Sample ID: LCS 440-515802/2-G **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved** Analysis Batch: 516916 **Prep Batch: 516575** Spike LCS LCS %Rec. Added Result Qualifier Limits **Analyte** Unit %Rec Cadmium 80.0 79.9 ug/L 100 85 - 115

80.0 82.8 ug/L 104 85 - 115 Copper Lead 80.0 85.1 ug/L 106 85 - 115 Selenium 80.0 77.9 ug/L 97 85 - 115

Lab Sample ID: 440-226838-2 MS Client Sample ID: Outfall002 20181207 Comp F **Matrix: Water Prep Type: Dissolved Analysis Batch: 516916 Prep Batch: 516575** Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Cadmium ND 80.0 77.6 97 ug/L 70 - 130 ug/L Copper 2.6 80.0 85.8 104 70 - 130 ug/L Lead ND 80.0 79.8 100 70 - 130 ND Selenium 80.0 74.1 ug/L 93 70 - 130

Lab Sample ID: 440-226838-2 MSD Client Sample ID: Outfall002_20181207_Comp_F **Prep Type: Dissolved**

Matrix: Water

Analysis Batch: 516916									Prep Ba	itch: 51	6575	
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Cadmium	ND		80.0	78.2		ug/L		98	70 - 130	1	20	
Copper	2.6		80.0	83.6		ug/L		101	70 - 130	3	20	
Lead	ND		80.0	79.7		ug/L		100	70 - 130	0	20	
Selenium	ND		80.0	73.7		ug/L		92	70 - 130	1	20	

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Prep Batch: 516575

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-516687/1-A Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Water

Analysis Batch: 517219 Prep Batch: 516687

MB MB

Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac Prepared 0.20 <u>12/13/18 13:26</u> <u>12/13/18 21:50</u> ND 0.10 ug/L Mercury

Lab Sample ID: LCS 440-516687/2-A Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 517219 Prep Batch: 516687** Spike LCS LCS %Rec.

Added Analyte Result Qualifier Limits Unit %Rec Mercury 8.00 8.34 ug/L 104 85 - 115

Lab Sample ID: 440-226822-D-1-E MS Client Sample ID: Matrix Spike Prep Type: Total/NA

Matrix: Water

Analysis Batch: 517219 Prep Batch: 516687 Sample Sample Spike MS MS %Rec.

Result Qualifier Added Result Qualifier Limits Analyte Unit D %Rec Mercury ND 8.00 8.06 101 75 - 125 ug/L

Lab Sample ID: 440-226822-D-1-F MSD **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 517219

Prep Batch: 516687 Sample Sample Spike MSD MSD %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit $\overline{\mathsf{ND}}$ 8.00 8.20 103 75 - 125 Mercury ug/L

Lab Sample ID: MB 440-515802/1-D Client Sample ID: Method Blank **Prep Type: Dissolved**

Matrix: Water

Mercury

Analysis Batch: 516542

MR MR

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.20 <u>12/11/18 11:36</u> <u>12/11/18 19:10</u> Mercury ND 0.10 ug/L

Lab Sample ID: LCS 440-515802/2-D **Client Sample ID: Lab Control Sample Prep Type: Dissolved**

Matrix: Water Analysis Batch: 516542

Spike LCS LCS %Rec.

Added Result Qualifier Analyte Unit Limits D %Rec 8 00 ug/L 96 85 - 115 Mercury 7 70

Lab Sample ID: 440-226838-2 MS Client Sample ID: Outfall002_20181207_Comp_F

Matrix: Water

ND

Analysis Batch: 516542 **Prep Batch: 516137** Sample Sample Spike MS MS %Rec. Result Qualifier Added **Analyte** Result Qualifier Unit %Rec Limits

Mercury ND 8.00 7.56 95 75 - 125

8.00

Lab Sample ID: 440-226838-2 MSD Client Sample ID: Outfall002 20181207 Comp F

Matrix: Water

Prep Type: Dissolved Analysis Batch: 516542 Prep Batch: 516137 Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Limits Limit Analyte Result Qualifier Unit D %Rec RPD

7.65

ug/L

96

75 - 125

TestAmerica Irvine

Prep Batch: 516137

Prep Batch: 516137

Prep Type: Dissolved

Client: Haley & Aldrich, Inc. TestAmerica Job ID: 440-226838-1 Project/Site: Quarterly Outfall 002 Comp

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-515813/5 Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515813

MB MB Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac D Prepared 0.10 0.040 NTU **Turbidity** ND 12/09/18 09:15

Lab Sample ID: 440-226838-1 DU Client Sample ID: Outfall002 20181207 Comp **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515813

DU DU **RPD** Sample Sample Result Qualifier Result Qualifier **RPD** Analyte Limit Unit D **Turbidity** 2500 2440 NTU 20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Client Sample ID: Method Blank Lab Sample ID: MB 440-517079/1 **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 517079

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Total Dissolved Solids 10 $\overline{\mathsf{ND}}$ 5.0 mg/L 12/14/18 09:17

Lab Sample ID: LCS 440-517079/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 517079

LCS LCS Spike %Rec. Added Result Qualifier %Rec Limits Unit Total Dissolved Solids 1000 990 mg/L 99 90 - 110

Lab Sample ID: 440-227505-E-31 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 517079

Sample Sample DU DU **RPD** Result Qualifier Result Qualifier RPD Limit Analyte Unit Total Dissolved Solids 24000 23900 0.7 mg/L

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-517087/1 **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

Analysis Batch: 517087

MB MB RL Analyte Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac Total Suspended Solids $\overline{\mathsf{ND}}$ 1.0 0.50 mg/L 12/14/18 08:46

Lab Sample ID: LCS 440-517087/2 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 517087

Spike LCS LCS %Rec.

Analyte Added Result Qualifier Unit %Rec Limits **Total Suspended Solids** 1000 1050 mg/L 105 85 - 115

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Prep Batch: 518834

105

105

70 - 115

70 - 115

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Comp

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-226735-B-1 DU **Client Sample ID: Duplicate Matrix: Water** Prep Type: Total/NA

Analysis Batch: 517087

Sample Sample DU DU **RPD** Result Qualifier Result Qualifier Unit D RPD Limit Analyte 3 **Total Suspended Solids** 6.5 6.32 mg/L 10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

ND

ND

Lab Sample ID: MB 440-518834/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518850

MB MB RL Analyte Result Qualifier **MDL** Unit Dil Fac Prepared Analyzed Cyanide, Total $\overline{\mathsf{ND}}$ 5.0 2.5 ug/L 12/21/18 19:14 12/21/18 23:46

Lab Sample ID: LCS 440-518834/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518850** Prep Batch: 518834 Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits 100 103 90 - 110 Cyanide, Total 103 ug/L

Lab Sample ID: 440-227751-A-4-B MS Client Sample ID: Matrix Spike **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518850 Prep Batch: 518834** Spike MS MS %Rec. Sample Sample Result Qualifier Added Result Qualifier Limits Analyte Unit %Rec

100

100

Lab Sample ID: 440-227751-A-4-C MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518850 Prep Batch: 518834** Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier %Rec Limits RPD Analyte Unit Limit

105

105

ug/L

ug/L

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-518382/10 **Client Sample ID: Method Blank** Prep Type: Total/NA

Matrix: Water

Cyanide, Total

Cyanide, Total

Analysis Batch: 518382

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.200 Ammonia (as N) $\overline{\mathsf{ND}}$ 0.100 mg/L 12/19/18 13:43

Client Sample ID: Lab Control Sample Lab Sample ID: LCS 440-518382/11 **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518382

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits Ammonia (as N) 5.00 4.890 mg/L 98 90 - 110

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Client: Haley & Aldrich, Inc. TestAmerica Job ID: 440-226838-1

Project/Site: Quarterly Outfall 002 Comp

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: MRL 440-518382/9 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518382

Spike MRL MRL %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 0.200 Ammonia (as N) 0.1610 J,DX mg/L 81 50 - 150

Lab Sample ID: 440-227448-K-1 MS Client Sample ID: Matrix Spike **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518382

Sample Sample Spike MS MS %Rec. Result Qualifier Added Limits Analyte Result Qualifier Unit %Rec Ammonia (as N) ND 5.00 5.070 mg/L 101 90 - 110

Lab Sample ID: 440-227448-K-1 MSD **Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA**

Matrix: Water

Analysis Batch: 518382

Sample Sample Spike MSD MSD %Rec. **RPD** RPD Result Qualifier Added Result Qualifier Limits Limit Analyte Unit D %Rec Ammonia (as N) ND 5.00 5.050 mg/L 101

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-515808/3 **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515808

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Methylene Blue Active Substances ND 0.10 0.050 ma/L 12/09/18 07:19

Lab Sample ID: LCS 440-515808/4 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515808

Spike LCS LCS %Rec. Added Result Qualifier Unit %Rec Limits Analyte D 0.250 0.236 Methylene Blue Active mg/L 90 - 110

Substances

Lab Sample ID: 440-226838-1 MS Client Sample ID: Outfall002_20181207_Comp Prep Type: Total/NA

Matrix: Water

Analysis Batch: 515808

Spike MS MS Sample Sample %Rec. **Analyte** Result Qualifier Added Result Qualifier Unit %Rec Limits ND 0.250 0.0779 J,DX LN mg/L 31 50 - 125 Methylene Blue Active

Substances

Lab Sample ID: 440-226838-1 MSD Client Sample ID: Outfall002_20181207_Comp **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515808

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Analyte D ND 0.250 0.102 LN BA 41 Methylene Blue Active mg/L 50 - 125 27 20

Substances

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QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Client Sample ID: Method Blank

Prep Type: Total/NA

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-515805/1

Matrix: Water

Analysis Batch: 515805

USB USB	USB	USB
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Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac ND 2.0 12/08/18 17:30 **Biochemical Oxygen Demand** 0.50 mg/L

LCS LCS

mg/L

mg/L

208

200

Spike

Added

199

Lab Sample ID: LCS 440-515805/4

Matrix: Water

Analysis	Batch:	515805

Biochemical Oxygen Demand

Analyte		

Lab Sample ID: LCSD 440-515805/5

Matrix: Water

Analysis Batch: 515805

Allalysis	Daten.	010000

•	Spike
Analyte	Added
Biochemical Oxygen Demand	199

Client Sample ID: Lab Control Sample

85 - 115

Prep Type: Total/NA

%Rec. Limits Result Qualifier %Rec Unit

105

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

LCSD LCSD %Rec. **RPD** Result Qualifier Unit D %Rec

Limit Limits RPD 101

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

GC/MS Semi VOA

Prep Batch: 515842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	625	
MB 440-515842/1-A	Method Blank	Total/NA	Water	625	
LCS 440-515842/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-515842/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 516279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	625	515842
MB 440-515842/1-A	Method Blank	Total/NA	Water	625	515842
LCS 440-515842/2-A	Lab Control Sample	Total/NA	Water	625	515842
LCSD 440-515842/3-A	Lab Control Sample Dup	Total/NA	Water	625	515842

GC Semi VOA

Analysis Batch: 516104

Lab Sample ID 440-226838-1	Client Sample ID Outfall002_20181207_Comp	Prep Type Total/NA	Matrix Water	Method 608 Pesticides	Prep Batch 516165
MB 440-516165/1-A	Method Blank	Total/NA	Water	608 Pesticides	516165
LCS 440-516165/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	516165
LCSD 440-516165/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	516165

Prep Batch: 516165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	608	
MB 440-516165/1-A	Method Blank	Total/NA	Water	608	
LCS 440-516165/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-516165/3-A	Lab Control Sample Dup	Total/NA	Water	608	

Prep Batch: 518465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	608	
MB 440-518465/1-A	Method Blank	Total/NA	Water	608	
LCS 440-518465/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-518465/3-A	Lab Control Sample Dup	Total/NA	Water	608	

Analysis Batch: 518537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	608 PCB LL	518465
MB 440-518465/1-A	Method Blank	Total/NA	Water	608 PCB LL	518465
LCS 440-518465/2-A	Lab Control Sample	Total/NA	Water	608 PCB LL	518465
LCSD 440-518465/3-A	Lab Control Sample Dup	Total/NA	Water	608 PCB LL	518465

HPLC/IC

Analysis Batch: 515764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	300.0	
MB 440-515764/6	Method Blank	Total/NA	Water	300.0	
LCS 440-515764/5	Lab Control Sample	Total/NA	Water	300.0	
440-226822-A-1 MS	Matrix Spike	Total/NA	Water	300.0	

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

HPLC/IC (Continued)

Analysis Batch: 515764 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 515765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	300.0	<u> </u>
MB 440-515765/6	Method Blank	Total/NA	Water	300.0	
LCS 440-515765/5	Lab Control Sample	Total/NA	Water	300.0	
440-226822-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-226822-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 516202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	314.0	_
MB 440-516202/6	Method Blank	Total/NA	Water	314.0	
LCS 440-516202/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-516202/4	Lab Control Sample	Total/NA	Water	314.0	
440-226822-A-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-226822-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 517960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	NO3NO2 Calc	

Metals

Filtration Batch: 515802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	FILTRATION	
MB 440-515802/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-515802/1-F	Method Blank	Dissolved	Water	FILTRATION	
MB 440-515802/1-G	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-515802/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-515802/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-515802/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
440-226822-B-2-J MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-226822-B-2-K MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-226838-2 MS	Outfall002_20181207_Comp_F	Dissolved	Water	FILTRATION	
440-226838-2 MSD	Outfall002_20181207_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 516137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	245.1	515802
MB 440-515802/1-D	Method Blank	Dissolved	Water	245.1	515802
LCS 440-515802/2-D	Lab Control Sample	Dissolved	Water	245.1	515802
440-226838-2 MS	Outfall002_20181207_Comp_F	Dissolved	Water	245.1	515802
440-226838-2 MSD	Outfall002_20181207_Comp_F	Dissolved	Water	245.1	515802

Analysis Batch: 516542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	245.1	516137

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14

15

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Metals (Continued)

Analysis Batch: 516542 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-515802/1-D	Method Blank	Dissolved	Water	245.1	516137
LCS 440-515802/2-D	Lab Control Sample	Dissolved	Water	245.1	516137
440-226838-2 MS	Outfall002_20181207_Comp_F	Dissolved	Water	245.1	516137
440-226838-2 MSD	Outfall002_20181207_Comp_F	Dissolved	Water	245.1	516137

Prep Batch: 516574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	200.2	515802
MB 440-515802/1-F	Method Blank	Dissolved	Water	200.2	515802
LCS 440-515802/2-F	Lab Control Sample	Dissolved	Water	200.2	515802
440-226822-B-2-J MS	Matrix Spike	Dissolved	Water	200.2	515802
440-226822-B-2-K MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	515802

Prep Batch: 516575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	200.2	515802
MB 440-515802/1-G	Method Blank	Dissolved	Water	200.2	515802
LCS 440-515802/2-G	Lab Control Sample	Dissolved	Water	200.2	515802
440-226838-2 MS	Outfall002_20181207_Comp_F	Dissolved	Water	200.2	515802
440-226838-2 MSD	Outfall002_20181207_Comp_F	Dissolved	Water	200.2	515802

Analysis Batch: 516674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	200.7 Rev 4.4	516574
MB 440-515802/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	516574
LCS 440-515802/2-F	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	516574
440-226822-B-2-J MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	516574
440-226822-B-2-K MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	516574

Prep Batch: 516687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	245.1	
MB 440-516687/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-516687/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-226822-D-1-E MS	Matrix Spike	Total/NA	Water	245.1	
440-226822-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 516916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	200.8	516575
MB 440-515802/1-G	Method Blank	Dissolved	Water	200.8	516575
LCS 440-515802/2-G	Lab Control Sample	Dissolved	Water	200.8	516575
440-226838-2 MS	Outfall002_20181207_Comp_F	Dissolved	Water	200.8	516575
440-226838-2 MSD	Outfall002_20181207_Comp_F	Dissolved	Water	200.8	516575

Analysis Batch: 517219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	245.1	516687
MB 440-516687/1-A	Method Blank	Total/NA	Water	245.1	516687
LCS 440-516687/2-A	Lab Control Sample	Total/NA	Water	245.1	516687
440-226822-D-1-E MS	Matrix Spike	Total/NA	Water	245.1	516687

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Metals (Continued)

Analysis Batch: 517219 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	516687

Prep Batch: 517388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total Recoverable	Water	200.2	
MB 440-517388/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-517388/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-226838-1 MS	Outfall002_20181207_Comp	Total Recoverable	Water	200.2	
440-226838-1 MSD	Outfall002_20181207_Comp	Total Recoverable	Water	200.2	

Prep Batch: 517392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total Recoverable	Water	200.2	<u> </u>
MB 440-517392/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-517392/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-226838-1 MS	Outfall002_20181207_Comp	Total Recoverable	Water	200.2	
440-226838-1 MSD	Outfall002_20181207_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 517466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total Recoverable	Water	200.8	517388
MB 440-517388/1-A	Method Blank	Total Recoverable	Water	200.8	517388
LCS 440-517388/2-A	Lab Control Sample	Total Recoverable	Water	200.8	517388
440-226838-1 MS	Outfall002_20181207_Comp	Total Recoverable	Water	200.8	517388
440-226838-1 MSD	Outfall002_20181207_Comp	Total Recoverable	Water	200.8	517388

Filtration Batch: 518440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Dissolved	Water	FILTRATION	
MB 440-518440/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-518440/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-226838-1 MS	Outfall002_20181207_Comp	Dissolved	Water	FILTRATION	
440-226838-1 MSD	Outfall002_20181207_Comp	Dissolved	Water	FILTRATION	

Analysis Batch: 518714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	517392
MB 440-517392/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	517392
LCS 440-517392/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	517392
440-226838-1 MS	Outfall002_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	517392
440-226838-1 MSD	Outfall002_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	517392

Prep Batch: 519128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Dissolved	Water	200.2	518440
MB 440-518440/1-C	Method Blank	Dissolved	Water	200.2	518440
LCS 440-518440/2-C	Lab Control Sample	Dissolved	Water	200.2	518440
440-226838-1 MS	Outfall002_20181207_Comp	Dissolved	Water	200.2	518440
440-226838-1 MSD	Outfall002_20181207_Comp	Dissolved	Water	200.2	518440

TestAmerica Irvine

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Metals (Continued)

Analysis Batch: 519372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Dissolved	Water	200.7 Rev 4.4	519128
MB 440-518440/1-C	Method Blank	Dissolved	Water	200.7 Rev 4.4	519128
LCS 440-518440/2-C	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	519128
440-226838-1 MS	Outfall002_20181207_Comp	Dissolved	Water	200.7 Rev 4.4	519128
440-226838-1 MSD	Outfall002_20181207_Comp	Dissolved	Water	200.7 Rev 4.4	519128

Analysis Batch: 520206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002 20181207 Comp	Total Recoverable	Water	SM 2340B	

Analysis Batch: 520207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-2	Outfall002_20181207_Comp_F	Dissolved	Water	SM 2340B	

General Chemistry

Analysis Batch: 515805

Lab Sample ID 440-226838-1	Client Sample ID Outfall002_20181207_Comp	Prep Type Total/NA	Matrix Water	Method SM5210B	Prep Batch
USB 440-515805/	Method Blank	Total/NA	Water	SM5210B	
LCS 440-515805/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-515805	/5 Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 515808

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	SM 5540C	
MB 440-515808/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-515808/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-226838-1 MS	Outfall002_20181207_Comp	Total/NA	Water	SM 5540C	
440-226838-1 MSD	Outfall002_20181207_Comp	Total/NA	Water	SM 5540C	

Analysis Batch: 515813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	180.1	
MB 440-515813/5	Method Blank	Total/NA	Water	180.1	
440-226838-1 DU	Outfall002 20181207 Comp	Total/NA	Water	180.1	

Analysis Batch: 517079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	SM 2540C
MB 440-517079/1	Method Blank	Total/NA	Water	SM 2540C
LCS 440-517079/2	Lab Control Sample	Total/NA	Water	SM 2540C
440-227505-E-31 DU	Duplicate	Total/NA	Water	SM 2540C

Analysis Batch: 517087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	SM 2540D	
MB 440-517087/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-517087/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-226735-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

TestAmerica Irvine

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

General Chemistry (Continued)

Analysis Batch: 518382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep B	Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-518382/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-518382/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-518382/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-227448-K-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-227448-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Prep Batch: 518834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	Distill/CN	
MB 440-518834/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-518834/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-227751-A-4-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-227751-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 518850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	SM 4500 CN E	518834
MB 440-518834/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	518834
LCS 440-518834/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	518834
440-227751-A-4-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	518834
440-227751-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	518834

Definitions/Glossary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
Qualifici	Qualifier Description

J,DX Estimated value; value < lowest standard (MQL), but >than MDL

Metals

Qualifier	Qualifier Description

LN MS and/or MSD below acceptance limits. See Blank Spike (LCS)

BB Sample > 4X spike concentration

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
BA	Relative percent difference out of control

Glossary

RER

RPD

RL

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

Relative Percent Difference, a measure of the relative difference between two points

Reporting Limit or Requested Limit (Radiochemistry)

Relative Error Ratio (Radiochemistry)

TestAmerica Irvine

2

1

4

5

8

10

12

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226838-1

Project/Site: Quarterly Outfall 002 Comp

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

AuthorityProgramEPA Region
9Identification Number
CA ELAP 2706Expiration Date
06-30-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method Prep Method Matrix Analyte

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13

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December 27, 2018

Ms. Urvashi Patel TestAmerica Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT:

TestAmerica Irvine

SAMPLE I.D.:

Outfall002_20181207_Comp (440-226838-1)

DATE RECEIVED:

7 Dec - 18

ABC LAB. NO.:

TAM1218.057

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

*GROWTH = PASS % EFFECT = -19.66 %

Yours yery truly,

Scott Johnson

Laboratory Director

26 Dec-18 12:14 (p 1 of 1)

Test Code:

TAM1218.057 | 05-3185-4790

							rest	Code:	TAIVITZ	10.037 0	5-3185-4790
Selenastrum	Growth Test							Aquatic Bi	oassay & C	onsulting	Labs, Inc.
Batch ID:	04-8722-6794	Test	Type: Ce	II Growth			Analy	/st:			
Start Date:	07 Dec-18 17:20	Proto	col: EF	A/821/R-02-0	013 (2002)		Dilue	nt: Labo	ratory Wate	r	
Ending Date:	11 Dec-18 15:20	Spec	i es : Se	lenastrum ca	pricornutum		Brine	: Not	Applicable		
Duration:	94h	Sour	ce: Aq	uatic Biosyst	ems, CO		Age:				
Sample ID:	00-9815-9765	Code	: ТА	M1218.057			Clien	t: Test	America Irv	ine	
Sample Date:	: 07 Dec-18 10:05	Mate	r ial: Sa	mple Water			Proje	ct: Boei	ng-SSFL NF	PDES	
Receipt Date:	: 07 Dec-18 16:50	Sour	ce: Bid	assay Repor	t						
Sample Age:	7h (2.5 °C)	Statio	on: Ou	itfall002_201	81207_Com	p (440-2268	338-				
Single Comp	arison Summary										
Analysis ID	Endpoint		Compari	son Method			P-Value	Comparis	on Result		
06-3030-7162	Cell Density		TST-Wel	ch's t Test	F:		<1.0E-37	100% pas:	sed cell den	sity	
Test Accepta	bility					TAC Li	imits				
Analysis ID	Endpoint		Attribute		Test Stat	Lower	Upper	Overlap	Decision		
06-3030-7162	Cell Density		Control C	:V	0.06625	<<	0.2	Yes	Passes Cr	iteria	
06-3030-7162	Cell Density		Control R	esp	1.15E+6	1000000	>>	Yes	Passes Cr	iteria	
Cell Density	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.148E+6	1.085E+6	1.212E+6	1.044E+6	1.253E+6	2.690E+4	7.608E+4	6.62%	0.00%
100		8	1.374E+6	1.314E+6	1.434E+6	1.243E+6	1.466E+6	2.534E+4	7.167E+4	5.21%	-19.66%
Cell Density	Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
0	N	1.162E+6	1.252E+6	1.165E+6	1.253E+6	1.044E+6	1.075E+6	1.106E+6	1.131E+6		
100		1.466E+6	1.396E+6	3 1.387E+6	1.449E+6	1.341E+6	1.322E+6	1.243E+6	1.390E+6		

26 Dec-18 12:14 (p 1 of 2)

Test Code:

TAM1218.057 | 05-3185-4790

	•						Test	Code:	TAM12	18.057 0	5-3185-4790
Selenastrum Grov	wth Test							Aquatic Bi	oassay & C	onsulting	Labs, Inc.
Analysis ID: 06-	-3030-7162	Endr	oint: Cel	l Density			CETI	S Version:	CETISv1.	9.2	
•	Dec-18 12:1			ametric Bioe	equivalence-	Two Sample	e Offic	ial Results:			
Batch ID: 04-8	3722-6794	Test	Type: Cel	I Growth			Anal	vst:			
Start Date: 07 [Dec-18 17:20			A/821/R-02-0	013 (2002)		Dilue		ratory Wate	er	
Ending Date: 11 l	Dec-18 15:20	Spec		enastrum ca			Brine		Applicable		
Duration: 94h		Sour		uatic Biosyst	•		Age:				
Sample ID: 00-9	9815-9765	Code	e: TAI	M1218.057			Clien	nt: Test	America Irv	vine	
Sample Date: 07 I	Dec-18 10:05	Mate		nple Water			Proje		ng-SSFL NF		
Receipt Date: 07 (Dec-18 16:50	Sour	ce: Bio	assay Repor	t						
Sample Age: 7h (Stati		fall002_201		p (440-2268	338-				
Data Transform		Alt Hyp			TST_b		Comparis	on Result			
Untransformed		C*b < T			0.75			sed cell den	sity		
TST-Welch's t Tes	st										
Control vs	Control II	l	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)		
Negative Control	100*		15.84	0.6938	13	CDF	<1.0E-37	Non-Signif	icant Effect		
Test Acceptability	Criteria	TAC Li	mits								
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control CV	0.06625	<<	0.2	Yes	Passes Cr	iteria					
Control Resp	1.15E+6	1000000	>>	Yes	Passes Cr	iteria					
ANOVA Table											
Source	Sum Squa	ares	Mean Squ	uare	DF	F Stat	P-Value	Decision(α:5%)		
Between	2.039E+11		2.039E+1	1	1	37.32	2.7E-05	Significant	Effect		
Error	7.647E+10)	5.462E+0	9	14	_					
Total	2.803E+11				15						
Distributional Tes	its										
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)		
Variances		uality of Var			0.06409	8.862	0.8038	Equal Vari	ances		
Variances		ne Equality o	of Variance	Test	0.1395	8.862	0.7144	Equal Vari	ances		
Variances		Ratio F Test			1.127	8.885	0.8786	Equal Vari	ances		
Distribution		Darling A2 N	•	est	0.3204	3.878	0.5537	Normal Di	stribution		
Distribution	_	Skewness			0.2346	2.576	0.8145	Normal Di			
Distribution [,]	-	v-Smirnov [0.1334	0.2471	0.6809	Normal Di			
Distribution	Shapiro-W	ilk W Norma	ality Test		0.9547	0.8408	0.5669	Normal Di	stribution		
Cell Density Sum	mary										
Conc-%	Code	Count	Mean		95% UCL		Min	Мах	Std Err	CV%	%Effect
0	N	8	1.148E+6		1.212E+6		1.044E+6		2.690E+4		0.00%
100		8	1.374E+6	1.314E+6	1.434E+6	1.388E+6	1.243E+6	1.466E+6	2.534E+4	5.21%	-19.66%
Cell Density Deta	il				11						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
0	N	1.162E+6	1.252E+6			1.044E+6	1.075E+6		1.131E+6		
100		1.466E+6	1.396E+6	1.387E+6	1.449E+6	1.341E+6	1.322E+6	1.243E+6	1.390E+6		

Analyst: QA:

26 Dec-18 12:14 (p 2 of 2)

Test Code:

TAM1218.057 | 05-3185-4790

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: Analyzed:

06-3030-7162 26 Dec-18 12:13

Analysis:

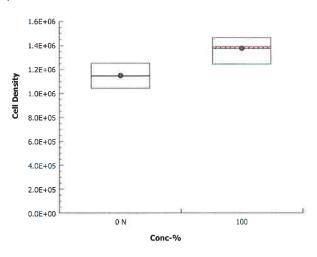
Endpoint: Cell Density

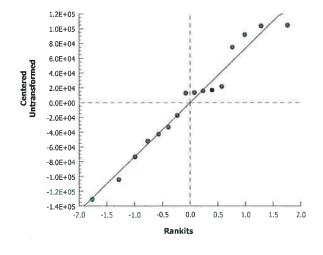
Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2

Official Results: Yes

Graphics





CETIS™ v1.9.2.6

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26 Dec-18 12:14 (p 1 of 2)

Test Code:

TAM1218.057 | 05-3185-4790

									17 (14)	2.0.507 0	
Selenastrum	Growth Test							Aqua	tic Bioassay &	Consulting	g Labs, Inc.
Batch ID: Start Date: Ending Date: Duration:	04-8722-6794 07 Dec-18 17:2 11 Dec-18 15:2 94h	0 0	Test Type: Protocol: Species: Source:	Cell Growth EPA/821/R-02- Selenastrum c Aquatic Biosys	apricornutur	n		Analyst: Diluent: Brine: Age:	Laboratory Wa Not Applicable		
·	00-9815-9765 : 07 Dec-18 10:0 : 07 Dec-18 16:5 7h (2.5°C)	5 0	Code: Material: Source: Station:	TAM1218.057 Sample Water Bioassay Repo Outfall002_20		np (440-	226838-	Client: Project:	Test America I Boeing-SSFL t		
Alkalinity (Ca	CO3)-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	75			75	75	0	0	0.0%	0
Overall		2	71.5	27.03	116	68	75	3.5	4.95	6.92%	0 (0%)
Conductivity-	-µmhos										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	447.2	402.7	491.7	420	493	16.01	35.8	8.01%	0
100		5	297.4	182.8	412	227	400	41.29	92.32	31.04%	0
Overall		10	372.3	298.7	445.9	227	493	32.54	102.9	27.64%	0 (0%)
Hardness (Ca	aCO3)-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	1	110			110	110	0	0	0.0%	0
100		1	100			100	100	0	0	0.0%	0
Overall		2	105	41.47	168.5	100	110	5	7.071	6.73%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	7.56	7.393	7.727	7.4	7.7	0.06	0.1342	1.78%	0
100		5	7.9	7.724	8.076	7.7	8	0.063	25 0.1414	1.79%	0
Overall		10	7.73	7.572	7.888	7.4	8	0.07	0.2214	2.86%	0 (0%)
Temperature	-°C										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	25.04	24.83	25.25	24.8	25.2	0.074	84 0.1673	0.67%	0
100		5	25.04	24.83	25.25	24.8	25.2	0.074		0.67%	0

Analyst:____QA:____

Report Date: Test Code: 26 Dec-18 12:14 (p 2 of 2)

TAM1218.057 | 05-3185-4790

Selenastrum (Frowth Test						Aquatic Bioassay & Consulting Labs, Inc.
Alkalinity (CaC	O3)-mg/L					N.	
Conc-%	Code	1					
0	N	68					
100		75					
Conductivity-	ımhos						
Conc-%	Code	1	2	3	4	5	
0	N	420	420	424	479	493	
100		227	230	233	397	400	
Hardness (Ca	CO3)-mg/L					9	
Conc-%	Code	1					
0	N	110					
100		100					
pH-Units							
Conc-%	Code	1	2	3	4	5	
0	N	7.4	7.5	7.5	7.7	7.7	
100		8	8	8	7.7	7.8	
Temperature-	,C					X -	
Conc-%	Code	1	2	3	4	5	
0	N	25.2	25	25	24.8	25.2	-
100		25.2	25	25	24.8	25.2	

Analyst:____QA:____

TestAmerica Irvine
17461 Derian Ave Suite 100

Chain of Custody Record





Irvine, CA 92614-5817
DI (0.40) 004 4000 E4040V000 2007

Client Information (Sub Contract Lab)	Sampler:			Lab I Pate	PM: el, Urv	ashi						I	arrier	Track	ing N	lo(s);			Š	COC No: 440-131240.1		
Client Contact: Shipping/Receiving	Phone:			E-Ma	iii: ashi.pa	atel@	testa)	merio	cainc.	com			tate o		in:					Page: Page 1 of 1		
Company: Aquatic Bioassay									(See na ifornia											Job #: 440-226838-1		
Address: 29 North Olive Street,	Due Date Reques 12/21/2018	ted:								_	is R	ear	este	ed					T	Preservation Cod		
City: Ventura State, Zip:	TAT Requested (c	iays):				strum			Ĥ					Ī				100		A - HCL B - NaOH C - Zn Acelate D - Nitric Acid	M - Hexar N - None O - AsNa(P - Na2O	02 4S
CA, 93001 Phone:	PO#:					c-Selene														E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid	Q - Na2S0 R - Na2S0 S - H2SO T - TSP D	203
Email:	WO#:				N ION	Chron												5		t - Ice J - DI Water	U - Acetor V - MCAA	ne L
Project Name: Quarterly Outfall 002 Comp Site:	Project #: 44009879 SSOW#:				Sample (Yes	enestrum)/													contain	K - EDTA L - EDA Other:	W - pH 4- Z - other (
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=wster, S=solid, O=wssteloil,	Field Filtered S.	onles													otal Number of	Special In	struction	s/Note:
Cample (Cestimeation - Orient is (Leas is)				ion Code:	W	1		100					2				9	>	\langle	New Year		Trought and
Outfali002_20181207_Comp (440-226838-1)	12/7/18	10:05 Pacific		Water		×													5			
				ora or L-	Ш																	THE STATE OF THE S
					Ш								1									
					Ш										4		_					
					Ш												_					
					Ц							1	1	1	4		1					
					Ш								1		1		4					
					Ш	\perp				4							\perp	19				
Note: Since laboratory accreditations are subject to change, TestAmerica Labor currently maintain accreditation in the State of Origin listed above for analysis/te Laboratories, Inc. attention immediately. If all requested accreditations are curr	sts/matrix being anal	lyzed, the samp	ples must be sh	ipped back to	the Tes	stAmer	rica lab	orator	y or oth	her ins	truction	ories. ns wil	This s be pr	sampl ovide	le shij d. Ar	pment ny cha	is for	warde to acc	d un redit	ider chain-of-custod tation status should	ly. If the lab be brought	oratory does no to TestAmerica
Possible Hazard Identification					S	ampl	e Dis	posa	il (Al	fee m	ay b	e as	sess	ed if	san	nples	s are	reta	ine	d longer than 1		
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliver	roble Book	2						Client				posa	l By	Lab	_		- Arc	hiv	re For	Month	S
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Custody Seals Intact: Custody Seal No.: Δ Yes Δ No		The second second				Coo	oier Te	mpera	ture(s)	°C and	d Othe	r Ren	narks:		rest.	61		2215	10.00		200	2905
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CHAIN OF CUSTODY FORM

age 2 of 2

1/24/2019 (Rev. 3)

Page 42 of 60

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San Diego,	Idrich ion Center Rd Suite 300 , CA 92108 ica Contact: Urvashi Patel		-		Pe ly Outfa O	-SSFL NPDE ermit 2018 all [001, 002, 0 utfall 002 Comp		8]			00.0), Tritium Combined dium 228		5.1)	(E608) rede			-	Ch	lor	ine (mg/L) =	cos
17461 Der Irvine CA 9 Tel 949-26 Cell 949-3	rian Ave Suite #100 92614 80-3269 33-9055					·			S. S.	I-E / E335.2)	Gross Alpha(E900.0), Gross Beta(E900.0), Tri (H-3) (E906.0), Sr-90 (E905.0), Total Combine Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	enastrum	s: Mercury (E245.1)	Priority Pollutants-Pesticides+PCBs (E	stals:	s. s CaCO3		NE	i. (3 ()	1g/Lomments >=	cas
Agreement# 20 TestAmerica La Sampler: [Denfi Smith	e with the T&CS within Blanket S , its subsidiaries and effiliates, a	nd	520,2 Field	89.860 d Mana	ager: Katheri 6, 520,904.69 ger: Mark Do	44 (ce minich	ell)	Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E /	a(E900.0), 3.0), Sr-90 5 (E903.0 in Pranium (E	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Dissolved Metals:	utants-Pe	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7): Hardness as					
Sample	<i>Q</i> 41		Sample		34,503	3, 818.599.07	02 (ce		II Disso 30.7): Z 30.8): C	nide (S	ss Alph (E906 ium 22/ 14.0), U	onic To 4-821-F	Il Disso	nity Poll	al Reco 30.7): F	Il Disso 00.7): F					
Description	Sample I,D,	Sampling Date/Time	Matrix	Container Type	Cont	Preservative	#	MS/MSD	Tota (E2(Cya	Rad (F.90 (E.90 (E	돌册	Tota	운 급	Tota (E20	Tots (E2(_	-	Filter and preserve w/in 24hrs of	
	0 03/1602-201812A.CM	12-7-16	WM	1 L Poly	1	None	190	No								х				receipt at lab at OF001,002,011, or 018	
	1-16, 1002-2015/247- (up	12.7-14	WM	500 mL Poly	1	HNO ₃	80	No							×					at OF001,002,011, or 018	1
			WM	1L Poly	1	None	200	No	×											Filter and preserve win 24hrs of receipt at lab at OF001,002,011, or 018.	
	Outfall002_20181207_Comp_F	12/7/2018	WM	1 L Glass Amber	2	None	250	No				9		X						Chlordane, DDD, DDE, DDT, dleidrin, PCBs, toxaphene at OF001,002,011, or 018.	
Outfall 002		71	WM	borosilicate vials	1	None	320	No					x							Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.	
			WM	500 mL Poly	1	NaOH	220	No		X							-	-	_	Unfiltered and unpreserved analysis	4
	Outfall002_20181207_Comp	12/7/2018	WM	2.5 Gal Cube 1 L Glass Amber	1	None None	225	No No			х									Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.	
			WM	1 Gal Cube	185	None	235	No				Х					4	+	+	Only test if first or second rain events of the year	
																	7	1	+		
																	#	#	\perp		
																	#	1	#		
																		_		32	
Relinquished	By Date/Time;	Compa	iny:				Receive	ed By	. /	D	ate/Time:		_	~	Turn-arou	ind time: (C	heck)	-			
Int I	mil 12-7	18/1435	_	Haloy	A	14/26	10	in	Vej	4	12-7-18	-	14	33	24 Hour: ₋ 48 Hour: ₋	7 5	2 Hour: 5 Day: _		10 D	Day:X mal:	
telinquished i	in Vega 12	2-7-18	16	:50			T,	ict	m	n	12-7-18	Î	6	50	Sample In Intact:	tegrity: (Ch	ieck)	0	n Ice:		
Refinquished I	Date/Time:	Compa	any:				Receive	ed By	,	D	ate/Time:				Store san Data Req	iples for 6 i uirements: IV	nonths (Check)		∕el IV·		



CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE:

6 December - 2018

STANDARD TOXICANT: Cadmium Chloride

NOEC =

<10.00 ug/l

IC25 =

67.99 ug/l

IC50 =

>140.00 ug/l

Yours very truly,

Scott Johnson

Laboratory Director

21 Dec-18 10:17 (p 1 of 1)

Test Code:

SEL120618 | 20-7096-1293

							icst oodc.		OLL	200 10 20-	1000-	200
Selenastrum	Growth Test						Aqua	itic Bi	oassay & C	onsulting l	.abs, I	nc.
Batch ID: Start Date: Ending Date: Duration:	07-4374-8636 06 Dec-18 13:04 10 Dec-18 12:30 95h	Test Type: Protocol: Species: Source:	Cell Growth EPA/821/R-02-0 Selenastrum cal Aquatic Biosyste	pricornutum			Analyst: Diluent: Brine: Age:		ratory Wate	r		•
Sample ID: Sample Date: Receipt Date: Sample Age:		Code: Material: Source: Station:	SEL120618 Cadmium chlori- Reference Toxic REF TOX	1.5			Client: Project:	Interr	nal Lab			
Multiple Com	parison Summary Endpoint	Comi	parison Method			NOE	L LOE	1	TOEL	TU	PMS	n ./
04-1574-4117			ett Multiple Comp	arison Test		< 10	10		n/a	10	8.16%	_
Point Estima	te Summary											
Analysis ID	Endpoint	Point	Estimate Metho	d		Leve	l μg/L		95% LCL	95% UCL	TU	✓
10-0218-2093	Cell Density	Linea	r Interpolation (IC	PIN)		IC5 IC10 IC15 IC20 IC25 IC40 IC50	3.22 6.44 9.66 24.7 67.9 >140	3 6 9 3 9	1.965 3.93 5.896 0.7599 n/a n/a	6.094 12.18 44.85 80.82 152.4 n/a		
Test Accepta	bility				TAC L	_imits						
Analysis ID	Endpoint	Attrik	oute	Test Stat	Lower	Uppe	er Ove	rlap	Decision			
04-1574-4117	•		rol CV	0.06678	<<	0.2	Yes		Passes Cr			
10-0218-2093	•	-	rol CV	0.06678	<<	0.2	Yes		Passes Cr			
04-1574-4117	•		rol Resp	1.35E+6	1000000	>>	Yes		Passes Cr			
10-0218-2093	Cell Density	Contr	rol Resp	1.35E+6	1000000	>>	Yes		Passes Cr	iteria		

Cell	Density	Summary
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Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.347E+6	1.204E+6	1.490E+6	1.286E+6	1.477E+6	4.499E+4	8.997E+4	6.68%	0.00%
10		4	1.138E+6	1.059E+6	1.218E+6	1.109E+6	1.213E+6	2.498E+4	4.997E+4	4.39%	15.51%
20		4	1.083E+6	9.123E+5	1.254E+6	1.004E+6	1.237E+6	5.363E+4	1.073E+5	9.90%	19.61%
40		4	1.061E+6	1.012E+6	1.110E+6	1.027E+6	1.102E+6	1.555E+4	3.110E+4	2.93%	21.25%
80		4	9.888E+5	9.420E+5	1.036E+6	9.510E+5	1.022E+6	1.469E+4	2.939E+4	2.97%	26.61%
140		4	9.428E+5	8.897E+5	9.958E+5	8.980E+5	9.770E+5	1.666E+4	3.331E+4	3.53%	30.02%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5

21 Dec-18 10:17 (p 1 of 2)

Test Code:

SEL120618 | 20-7096-1293

Selenastrum Gro	wth Test							Aquatic Bi	oassay & C	onsulting	Labs, Inc
Analysis ID: 04	-1574-4117	End	point: Ce	II Density			CETIS	S Version:	CETISv1.9	9.2	
Analyzed: 21	Dec-18 10:1	5 Ana	lysis: Pa	rametric-Conf	rol vs Treat	ments	Offici	al Results:	Yes		
Batch ID: 07-	4374-8636	Tes	t·Type: Ce	II Growth			Analy	st:			
Start Date: 06	Dec-18 13:04			A/821/R-02-0	13 (2002)		Dilue		ratory Wate	r	
Ending Date: 10	Dec-18 12:30	Spe	cies: Se	lenastrum caj	oricornutum		Brine	: Not A	Applicable		
Duration: 95h	1	Sou	ırce: Aq	uatic Biosyste	ems, CO		Age:				
Sample ID: 00-	9351-0249	Cod	le: SF	L120618			Client	h Interr	nal Lab		
Sample Date: 06				dmium chloric	de		Proje		iai Eab		
Receipt Date:				ference Toxic			, .				
Sample Age: n/a		Stat	tion: RE	F TOX							
Data Transform		Alt Hyp					NOEL	LOEL	TOEL	TU	DMCD
Untransformed		C > T					< 10	10	n/a	10	8.16%
							• 10	10	11/a		0.1076
Dunnett Multiple	Comparison	Test			2						
Control vs	Control II		Test Stat			P-Type	P-Value	Decision(
Negative Control	10*		4.576	2.407	1E+05 6	CDF	5.5E-04	Significant			
	20*		5.785	2.407	1E+05 6	CDF	6.6E-05	Significant			
	40*		6.267	2.407	1E+05 6	CDF	4.1E-05	Significant			
	80*		7.849	2.407	1E+05 6	CDF	2.8E-05	Significant	Effect		
	140*		8.856	2.407	1E+05 6	CDF	2.7E-05	Significant	Effect		
Test Acceptability	/ Criteria	TAC L	imits								
Attribute	Test Stat		Upper	Overlap	Decision						
Control CV/											
SOUTHOL CV	0.06678	<<	0.2	Yes	Passes Cr	iteria					
	0.06678 1.35E+6	<< 1000000	0.2 >>	Yes Yes	Passes Cr Passes Cr						
Control Resp											
Control Resp	1.35E+6	1000000	>>	Yes	Passes Cr	iteria	P-Value	Decision(v·5º/.)		
Control Resp ANOVA Table Source	1.35E+6 Sum Squa	1000000	>> Mean Sq	Yes	Passes Cr	iteria F Stat	P-Value	Decision(o			
Control Resp ANOVA Table Source Between	1.35E+6 Sum Squa 4.050E+11	1000000	% Mean Sq 8.101E+	Yes uare	Passes Cr DF 5	iteria	P-Value 1.1E-06	Decision(Significant			
Control Resp ANOVA Table Source Between Error	1.35E+6 Sum Squa	1000000 ares	>> Mean Sq	Yes uare	Passes Cr	iteria F Stat					
ANOVA Table Source Between Error	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11	1000000 ares	% Mean Sq 8.101E+	Yes uare	Passes Cr DF 5 18	iteria F Stat					
Control Resp ANOVA Table Source Between Error Total Distributional Test	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11	1000000 ares	% Mean Sq 8.101E+	Yes uare	DF 5 18 23	F Stat 19.41	1.1E-06	Significant	Effect		
Control Resp ANOVA Table Source Between Error Total Distributional Tea	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test	1000000	Mean Sq 8.101E+ 4.173E+0	Yes uare 0 0 9	DF 5 18 23 Test Stat	F Stat 19.41 Critical	1.1E-06 P-Value	Significant Decision(Effect		
Control Resp ANOVA Table Source Between Error Total Distributional Teather Attribute Variances	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq	ares	*** Mean Sq 8.101E+* 4.173E+6	Yes uare 10 09	DF 5 18 23 Test Stat 8.494	F Stat 19.41 Critical 15.09	1.1E-06 P-Value 0.1310	Significant Decision(Equal Vari	Effect a:1%) ances		
Control Resp ANOVA Table Source Between Error Total Distributional Tea Attribute Variances	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Equation Levene Education	ares	Mean Sq 8.101E+ 4.173E+0 ariance Testariance Testarian	Yes uare 10 09	DF 5 18 23 Test Stat 8.494 1.861	F Stat 19.41 Critical 15.09 4.248	1.1E-06 P-Value 0.1310 0.1516	Decision(Equal Vari Equal Vari	Effect a:1%) ances ances		
ANOVA Table Source Between Error Total Distributional Tea Attribute Variances Variances Variances	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Lever	uality of Va	Mean Sq 8.101E+' 4.173E+(ariance Testariance Testaria	Yes uare 10 09 t t Test	DF 5 18 23 Test Stat 8.494 1.861 0.8958	F Stat 19.41 Critical 15.09 4.248 4.248	P-Value 0.1310 0.1516 0.5047	Decision(e Equal Vari Equal Vari Equal Vari	Effect a:1%) ances ances ances ances		
Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Variances Distribution	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Lever Anderson-	ares uality of Valuality of Valuality of Valuality of Valuality of Valuality of Valuality Darling A2	Mean Sq 8.101E+' 4.173E+0 ariance Tes ariance Tes of Variance Normality 1	Yes uare 10 09 t t Test	DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885	F Stat 19.41 Critical 15.09 4.248 4.248 3.878	P-Value 0.1310 0.1516 0.5047 0.0231	Decision(Equal Vari Equal Vari Equal Vari Normal Dis	effect a:1%) ances ances ances ances stribution		
Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Variances Distribution Distribution Distribution	Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Lever Anderson- D'Agostino	ares uality of Valuality of Va	Mean Sq 8.101E+' 4.173E+(ariance Testariance Testariance Testariance Testariance Testariance Normality Test	Yes uare 10 09 t t Test	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662	F Stat 19.41 Critical 15.09 4.248 4.248 3.878 2.576	P-Value 0.1310 0.1516 0.5047 0.0231 0.0964	Decision(Equal Vari Equal Vari Equal Vari Normal Dis Normal Dis	Effect a:1%) ances ances ances stribution stribution		
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Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Distribution	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino D'Agostino	uality of Va quality of Va quality of Va ne Equality Darling A2 o Kurtosis T o Skewness	Mean Sq 8.101E+' 4.173E+(4.173E+(ariance Tes ariance Tes of Variance Normality Test 5 Test (2 Omnibus	Yes uare 0 0 0 9 t t Test	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992	F Stat 19.41 Critical 15.09 4.248 4.248 3.878 2.576 2.576 9.21	P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112	Decision(Equal Vari Equal Vari Equal Vari Normal Dis Normal Dis Normal Dis	Effect a:1%) ances ances ances stribution stribution stribution		
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Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Ustribution Distribution Distribution Distribution Distribution Distribution Distribution Cell Density Sum Conc-µg/L	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino C'Agostino Kolmogoro Shapiro-W	uality of Valuality of Various Schemes of Pearson Fov-Smirnov (ilk W Norm	Mean Sq 8.101E+ 4.173E+6 ariance Test ariance Test of Variance Normality Test S Test <2 Omnibus D Test nality Test	Yes uare 0 0 9 t e Test est Test Test	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992 0.1651 0.8988	F Stat 19.41 Critical 15.09 4.248 4.248 3.878 2.576 9.21 0.2056 0.884 Median	1.1E-06 P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112 0.0895 0.0203	Decision(a) Equal Vari Equal Vari Equal Vari Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis	a:1%) ances ances ances stribution stribution stribution stribution stribution	CV%	%Effec
Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Distribution Cell Density Sum Conc-µg/L	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino D'Agostino Kolmogoro Shapiro-W	ares juality of Valuality of V	Mean Sq 8.101E+ 4.173E+6 ariance Test ariance Test of Variance Normality Test S Test (2 Omnibus D Test nality Test	Yes uare 0 0 0 9 Test Test Test 95% LCL 1.204E+6	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992 0.1651 0.8988 95% UCL 1.490E+6	F Stat 19.41 Critical 15.09 4.248 4.248 3.878 2.576 9.21 0.2056 0.884 Median 1.313E+6	1.1E-06 P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112 0.0895 0.0203 Min 1.286E+6	Decision(a) Equal Vari Equal Vari Equal Vari Normal Dis	a:1%) ances ances ances stribution stribution stribution stribution stribution 4.499E+4	6.68%	0.00%
Control Resp ANOVA Table Source Between Error Total Distributional Teach Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Distribution Cell Density Sum Conc-µg/L 0	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino C'Agostino Kolmogoro Shapiro-W	ares juality of Valuality of V	Mean Sq 8.101E+1 4.173E+1 4.173E+1 4.173E+1 4.173E+1 6.173E+1 6.173E+1 7.173E+1 7.173E+1 7.173E+1 7.173E+1 7.173E+1 7.173E+1 7.173E+1	Yes uare 0 0 9 Test Test Test 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992 0.1651 0.8988 95% UCL 1.490E+6 1.218E+6	F Stat 19.41 Critical 15.09 4.248 4.248 3.878 2.576 2.576 9.21 0.2056 0.884 Median 1.313E+6 1.116E+6	1.1E-06 P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112 0.0895 0.0203 Min 1.286E+6 1.109E+6	Decision(decision) Equal Vari Equal Vari Equal Vari Equal Vari Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis	a:1%) ances ances ances stribution stribution stribution stribution stribution 4.499E+4 2.498E+4	6.68% 4.39%	0.00% 15.51%
Control Resp ANOVA Table Source Between Error Total Distributional Texa Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Cell Density Sum Conc-µg/L 0 10 20	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino C'Agostino Kolmogoro Shapiro-W	ares Juality of Valuality of V	Mean Sq 8.101E+1 4.173E+1 4.173E+1 4.173E+1 4.173E+1 6 Test 6 Test 7 Comnibus D Test 1.347E+1 1.138E+1 1.083E+1	Yes uare 0 0 0 9 Test Test 5 Test 1.204E+6 6 1.059E+6 6 9.123E+5	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992 0.1651 0.8988 95% UCL 1.490E+6 1.218E+6 1.254E+6	F Stat 19.41 Critical 15.09 4.248 4.248 3.878 2.576 2.576 9.21 0.2056 0.884 Median 1.313E+6 1.116E+6 1.046E+6	1.1E-06 P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112 0.0895 0.0203 Min 1.286E+6 1.109E+6 1.004E+6	Decision(e Equal Vari Equal Vari Equal Vari Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis 1.477E+6 1.237E+6	a:1%) ances ances ances stribution stribution stribution stribution stribution 4.499E+4 2.498E+4 5.363E+4	6.68% 4.39% 9.90%	0.00% 15.51% 19.61%
Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Cell Density Sum Conc-µg/L 0 10 20 40	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino C'Agostino Kolmogoro Shapiro-W	ares Juality of Valuality of V	Mean Sq 8.101E+' 4.173E+(4.173E+(4.173E+(4.173E+(4.173E+(5.7Est 8.7Est 8.7Est 8.7Est 8.7Est 8.7Est 8.7Est 1.347E+(1.138E+(1.083E+(1.061E+(Yes uare 0 0 0 9 Test Test 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992 0.1651 0.8988 95% UCL 1.490E+6 1.218E+6 1.218E+6 1.110E+6	F Stat 19.41 15.09 4.248 4.248 3.878 2.576 9.21 0.2056 0.884 Median 1.313E+6 1.116E+6 1.046E+6 1.058E+6	P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112 0.0895 0.0203 Min 1.286E+6 1.109E+6 1.004E+6 1.027E+6	Decision(e Equal Vari Equal Vari Equal Vari Rormal Dis Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis 1.477E+6 1.237E+6 1.102E+6	ex:1%) ances ances ances ances stribution stribution stribution stribution stribution 4.499E+4 2.498E+4 5.363E+4 1.555E+4	6.68% 4.39% 9.90% 2.93%	0.00% 15.51% 19.61% 21.25%
Control CV Control Resp ANOVA Table Source Between Error Total Distributional Test Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Cell Density Sum Conc-µg/L 0 10 20 40 80 140	1.35E+6 Sum Squa 4.050E+11 7.511E+10 4.801E+11 sts Test Bartlett Eq Levene Ec Mod Leven Anderson- D'Agostino D'Agostino C'Agostino Kolmogoro Shapiro-W	ares Juality of Valuality of V	Mean Sq 8.101E+' 4.173E+(4.173E+(4.173E+(4.173E+(4.173E+(5.7Est 8.7Est 8.7Est 8.7Est 8.7Est 8.7Est 8.7Est 1.347E+(1.138E+(1.138E+(1.061E+(9.888E+(Yes uare 0 0 0 9 Test Test 5 Test 1.204E+6 6 1.059E+6 6 9.123E+5	Passes Cr DF 5 18 23 Test Stat 8.494 1.861 0.8958 0.8885 1.662 2.496 8.992 0.1651 0.8988 95% UCL 1.490E+6 1.218E+6 1.218E+6 1.110E+6 1.036E+6	F Stat 19.41 15.09 4.248 4.248 3.878 2.576 9.21 0.2056 0.884 Median 1.313E+6 1.116E+6 1.046E+6 1.058E+6 9.910E+5	1.1E-06 P-Value 0.1310 0.1516 0.5047 0.0231 0.0964 0.0126 0.0112 0.0895 0.0203 Min 1.286E+6 1.109E+6 1.004E+6 1.027E+6 9.510E+5	Decision(e Equal Vari Equal Vari Equal Vari Equal Vari Normal Dis Normal Dis Normal Dis Normal Dis Normal Dis 1.477E+6 1.213E+6 1.102E+6 1.022E+6	ex:1%) ances ances ances ances stribution stribution stribution stribution stribution 4.499E+4 2.498E+4 5.363E+4 1.555E+4 1.469E+4	6.68% 4.39% 9.90% 2.93% 2.97%	0.00% 15.51% 19.61%

Analyst:_____QA:_____

Selenastrum Growth Test

Report Date:

21 Dec-18 10:17 (p 2 of 2)

Test Code: SEL120618 | 20-7096-1293

Aquatic Bioassay & Consulting Labs, Inc.

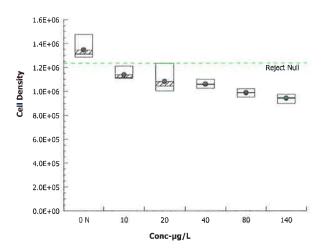
Analysis ID: 04-1574-4117 Endpoint: Cell Density CETIS Version: CETIS v1.9.2

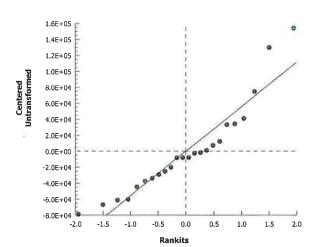
Analyzed: 21 Dec-18 10:15 Analysis: Parametric-Control vs Treatments Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5

Graphics





21 Dec-18 10:17 (p 1 of 2)

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								Test Code:			SEL	120618	20-7096-1293
Selenas	strum (Growth Test						Aqua	atic Bio	oassa	y &	Consulti	ng Labs, Inc.
Analysi Analyze		10-0218-2093 21 Dec-18 10:1		oint: ysis:	Cell Density Linear Interpola	ition (ICPIN)		CETIS Vers		CET Yes	ISv1	.9.2	
Batch II Start Da	ate:	07-4374-8636 06 Dec-18 13:04	Prote	ocol:	Cell Growth EPA/821/R-02-			Analyst: Diluent:	Labor	atory	Wat	er	
Ending Duratio		10 Dec-18 12:30 95h	Species: Source:		Selenastrum ca Aquatic Biosyst	•		Brine: Age:	Not A	pplica	ble		
Sample Sample Receipt Sample	Date: Date:		Code Mate Sour Stati	rial: ce:	SEL120618 Cadmium chlor Reference Toxi REF TOX			Client: Project:	Intern	al Lat	0		
Linear I	nterpo	olation Options											
X Trans	form	Y Transform	Seed		Resamples	Exp 95% CL	Method						
Linear		Linear	0		280	Yes	Two-Point	Interpolation					
Test Ac	ceptak	oility Criteria	TAC Li	mits									
Attribut		Test Stat	Lower	Uppe		Decision							
Control Control		0.06678 1.35E+6	1000000	0.2 >>	Yes Yes	Passes Criteria Passes Criteria							
Point E	stimat	es											
Level	μg/L	95% LCL	95% UCL										
IC5 IC10 IC15 IC20 IC25	3.223 6.446 9.669 24.73 67.99	3.93 5.896 0.7599 n/a	6.094 12.18 44.85 80.82 152.4										
1C40 1C50	>140 >140		n/a n/a			(5)							

Cell Density Summary		Calculated Variate								
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	N	4	1.347E+6	1.286E+6	1.477E+6	4.499E+4	8.997E+4	6.68%	0.0%	
10		4	1.138E+6	1.109E+6	1.213E+6	2.498E+4	4.997E+4	4.39%	15.51%	
20		4	1.083E+6	1.004E+6	1.237E+6	5.363E+4	1.073E+5	9.90%	19.61%	
40		4	1.061E+6	1.027E+6	1.102E+6	1.555E+4	3.110E+4	2.93%	21.25%	
80		4	9.888E+5	9.510E+5	1.022E+6	1.469E+4	2.939E+4	2.97%	26.61%	
140		4	9.428E+5	8.980E+5	9.770E+5	1.666E+4	3.331E+4	3.53%	30.02%	

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9,550E+5

21 Dec-18 10:17 (p 2 of 2)

Test Code:

SEL120618 | 20-7096-1293

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

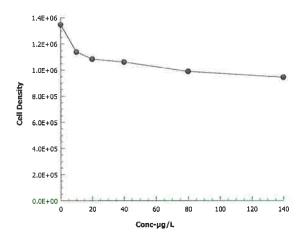
Analysis ID: Analyzed:

10-0218-2093 21 Dec-18 10:15 Endpoint: Cell Density Analysis:

Linear Interpolation (ICPIN)

CETISv1.9.2

Graphics



CETIS Version:

Official Results: Yes

Report Date: Test Code:

21 Dec-18 10:17 (p 1 of 2)

SEL120618 | 20-7096-1293

8 20-7096-1293	
Iting Labs, Inc.	

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inding Date: 10 Ouration: 95			Test Type: Protocol: Species: Source:	Cell Growth EPA/821/R-02- Selenastrum of Aquatic Biosys	apricornutur	n	Di Br		ooratory Wa t Applicable	ter	
sample ID: 00 sample Date: 06 Receipt Date: sample Age: n/s		4	Code: Material; Source: Station:	SEL120618 Cadmium chlo Reference Tox REF TOX				ient: Inte	ernal Lab		
Alkalinity (CaCO	03)-mg/L										
onc-μg/L	Code	Count		95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
	N	1	68			68	68	0	0	0.0%	0
0		1	60			60	60	0	0	0.0%	0
0		1	61			61	61	0	0	0.0%	0
0		1	63			63	63	0	0	0.0%	0
0		1	56			56	56	0	0	0.0%	0
40		1	55			55	55	0	0	0.0%	0
Overall		6	60.5	55.5	65.5	55	68	1.945	4.764	7.88%	0 (0%)
Conductivity-µm					52						
Conc-µg/L	Code	Coun		95% LCL		Min	Max	Std Err	Std Dev	CV%	QA Coun
	N	5	432	399.2	464.8	417	479	11.8	26.39	6.11%	0
0		5	434.4	428.2	440.6	430	443	2.249	5.03	1.16%	0
10		5	424.6	420.2	429	420	428	1.6	3.578	0.84%	0
0		5	410.2	403.7	416.7	405	419	2.354	5.263	1.28%	0
40		5 5	397	395.5	398.5	395	398	0.5477	1.225	0.31%	0
Overall		30	378.2 412.7	371.2 404.2	385.2 421.3	373 373	387 479	2.518 4.197	5.63 22.99	1.49% 5.57%	0 (00()
/VGI all		30	412.7	404.2	421.3	3/3	419	4.191	22.99	5.57 %	0 (0%)
landrana (CaCC	22\//										
lardness (CaCC	, -	Coun	. Moon	059/ 1 01	059/ 1101	Min	Marr	CAJ E	Ctd Day	C) /0/	04.0
Conc-µg/L	Code	Coun		95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	
Conc-µg/L	, -	Coun	110	95% LCL	95% UCL	110	110	0	0	0.0%	0
Conc-µg/L 0	Code	- 50	110 108	95% LCL	95% UCL	110 108	110 108	0	0	0.0% 0.0%	0
Conc-μg/L 0 0	Code	- 50	110 108 112	95% LCL	95% UCL	110 108 112	110 108 112	0 0 0	0 0 0	0.0% 0.0% 0.0%	0
Conc-µg/L 0 0 0	Code	- 50	110 108 112 116	95% LCL	95% UCL	110 108 112 116	110 108 112 116	0 0 0	0 0 0	0.0% 0.0% 0.0% 0.0%	0 0 0
Conc-µg/L 0 0 0 0 0	Code	- 50	110 108 112 116 99	95% LCL	95% UCL	110 108 112 116 99	110 108 112 116 99	0 0 0 0	0 0 0 0	0.0% 0.0% 0.0% 0.0% 0.0%	0 0 0 0
Conc-µg/L 0 0 0	Code	- 50	110 108 112 116	95% LCL 98.69	95% UCL	110 108 112 116	110 108 112 116	0 0 0	0 0 0	0.0% 0.0% 0.0% 0.0%	0 0 0
Conc-µg/L 0 0 0 0 0 0 40	Code	1 1 1 1 1	110 108 112 116 99 96			110 108 112 116 99 96	110 108 112 116 99 96	0 0 0 0 0	0 0 0 0 0	0.0% 0.0% 0.0% 0.0% 0.0%	0 0 0 0 0
Conc-µg/L 0 0 0 0 0 0 0 0 0 verall	Code	1 1 1 1 1	110 108 112 116 99 96 106.8		115	110 108 112 116 99 96	110 108 112 116 99 96	0 0 0 0 0 0 0 0 3.167	0 0 0 0 0 0 0 7.757	0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 7.26%	0 0 0 0 0 0 0 0
Conc-µg/L 0 0 0 0 0 0 0 O Verall DH-Units	Code N	1 1 1 1 1 1 6	110 108 112 116 99 96 106.8	98.69	115	110 108 112 116 99 96 96	110 108 112 116 99 96 116	0 0 0 0 0	0 0 0 0 0 0 0 7.757	0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 7.26%	0 0 0 0 0 0 0 0
Conc-µg/L 0 0 0 0 0 0 0 Overall DH-Units Conc-µg/L	Code N	1 1 1 1 1 1 1 6	110 108 112 116 99 96 106.8 Mean 7.52	98.69 95% LCL	115 - 95% UCL	110 108 112 116 99 96 96 96	110 108 112 116 99 96 116 Max 7.7	0 0 0 0 0 0 0 3.167 Std Err 0.04899	0 0 0 0 0 0 0 7.757	0.0% 0.0% 0.0% 0.0% 0.0% 7.26%	0 0 0 0 0 0 0 0 (0%)
Conc-µg/L 0 0 0 0 0 0 0 Overall DH-Units Conc-µg/L	Code N	1 1 1 1 1 1 6	110 108 112 116 99 96 106.8	98.69 95% LCL 7.384	115 95% UCL 7.656	110 108 112 116 99 96 96	110 108 112 116 99 96 116	0 0 0 0 0 0 0 3.167	0 0 0 0 0 0 7.757 Std Dev 0.1095	0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 7.26%	0 0 0 0 0 0 0 0 (0%)
Conc-µg/L 0 0 0 0 0 0 0 Overall DH-Units Conc-µg/L	Code N	1 1 1 1 1 1 6	110 108 112 116 99 96 106.8 t Mean 7.52 7.6	98.69 95% LCL 7.384 7.448	95% UCL 7.656 7.752	110 108 112 116 99 96 96 Min 7.4 7.5	110 108 112 116 99 96 116 Max 7.7 7.8	0 0 0 0 0 0 3.167 Std Err 0.04899 0.05477	0 0 0 0 0 0 7.757 Std Dev 0.1095 0.1225	0.0% 0.0% 0.0% 0.0% 0.0% 7.26% CV% 1.46% 1.61% 1.1%	0 0 0 0 0 0 0 0 (0%)
Conc-µg/L 0 0 0 0 0 0 0 verall bH-Units Conc-µg/L 0 0	Code N	1 1 1 1 1 1 6 Coun 5 5	110 108 112 116 99 96 106.8 Mean 7.52 7.6 7.62	98.69 95% LCL 7.384 7.448 7.516	115 95% UCL 7.656 7.752 7.724	110 108 112 116 99 96 96 Min 7.4 7.5 7.5	110 108 112 116 99 96 116 Max 7.7 7.8 7.7	0 0 0 0 0 0 3.167 Std Err 0.04899 0.05477 0.03742	0 0 0 0 0 7.757 Std Dev 0.1095 0.1225 0.08367	0.0% 0.0% 0.0% 0.0% 0.0% 7.26% CV% 1.46% 1.61%	0 0 0 0 0 0 0 (0%)
Conc-µg/L 0 0 0 0 0 40 Overall OH-Units Conc-µg/L 0 0	Code N	1 1 1 1 1 1 6 Coun 5 5 5 5	110 108 112 116 99 96 106.8 Mean 7.52 7.6 7.62 7.62	98.69 95% LCL 7.384 7.448 7.516 7.516	115 95% UCL 7.656 7.752 7.724 7.724	110 108 112 116 99 96 96 96 Min 7.4 7.5 7.5	110 108 112 116 99 96 116 Max 7.7 7.8 7.7	0 0 0 0 0 0 3.167 Std Err 0.04899 0.05477 0.03742 0.03742	0 0 0 0 0 7.757 Std Dev 0.1095 0.1225 0.08367 0.08367	0.0% 0.0% 0.0% 0.0% 0.0% 7.26% CV% 1.46% 1.61% 1.1%	0 0 0 0 0 0 0 (0%) QA Coun 0 0

QA:

Analyst:_

Code

Count

5

Mean

24.72

Selenastrum Growth Test

Temperature-°C

Conc-µg/L

Report Date:

21 Dec-18 10:17 (p 2 of 2)

Test Code: SEL120618 | 20-7096-1293 Aquatic Bioassay & Consulting Labs, Inc. Max Std Err Std Dev CV% **QA** Count 25.2 0.2059 0.4604 1.86% 0 25.2 0.2059 1.86% 0.4604 Ω

		-									
10		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
20		5	24.52	23.87	25.17	24	25.2	0.2332	0.5215	2.13%	0
40		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
80	v.	5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
140		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
Overall		30	24.69	24.52	24.85	24	25.2	0.07947	0.4353	1.76%	0 (0%)
Alkalinity (CaC	O3)-mg/L										
Conc-µg/L	Code	1									
0	N	68						·			

24

95% LCL 95% UCL Min

25.29

24.15

Aikaiiiity (CaC	03)-iiig/L					
Conc-µg/L	Code	1				
0	N	68				
10		60				
20		61				
40		63				
80		56				
140		55				
Conductivity-µ	mhos					
				22		

Conductivity-µ	mhos						
Conc-µg/L	Code	1	2	3	4	5	
0	N	417	420	420	424	479	
10		430	434	432	433	443	
20		420	422	425	428	428	
40		408	409	405	410	419	
80		395	397	398	397	398	
140		373	374	377	380	387	

40		408	409	405	410	419	
80		395	397	398	397	398	
140		373	374	377	380	387	
Hardness (CaC	CO3)-mg/L						
Conc-µg/L	Code	1					
0	N	110					
10		108					
20		112					
40		116					

20		112					
40		116					
80		99				0	
140		96					
pH-Units			·			·	
Conc-µg/L	Code	1	2	3	4	5	
0	N	7.5	7.4	7.5	7.5	7.7	
10		7.6	7.6	7.5	7.5	7.8	
20		7.7	7.6	7.6	7.5	7.7	
40		7.7	7.6	7.5	7.6	7.7	
80		7.7	7.6	7.5	7.6	7.8	
140		7.7	7.6	7.5	7.5	7.7	
Temperature-°C	:						
Conc-µg/L	Code	1	2	3	4	5	

Temperature-°C							
Conc-µg/L	Code	1	2	3	4	5	
0	N	24.6	25.2	24	25	24.8	
10		24.6	25.2	24	25	24.8	
20		24.6	25.2	24	24	24.8	
40		24.6	25.2	24	25	24.8	
80		24.6	25.2	24	25	24.8	
140		24.6	25.2	24	25	24.8	

Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>
Sent: Thursday, December 20, 2018 8:40 AM

To: Patel, Urvashi; Nguyen, Jocelyn

Subject: RE: 440-226838-1

-External Email-

Could you also add dissolved iron? This was not on the COC.

Katherine Miller HALEY & ALDRICH Tel: 520.289.8606

From: Miller, Katherine

Sent: Wednesday, December 12, 2018 11:05 AM

To: urvashi.patel@testamericainc.com; Nguyen, Jocelyn <Jocelyn.Nguyen@testamericainc.com>

Subject: 440-226838-1

Urvashi,

440-226838-1 for Outfall002_20181207_Comp. COC comment specifies only Fe, not Mn. Please make this change.

Katherine

Katherine Miller

Project Manager

Haley Aldrich, Inc.

600 South Meyer Ave. | Suite 100 Tucson, AZ 85701

T: (520) 289.8606 C: (520) 904.6944

www.haleyaldrich.com



Client Nam	e/Address					Project.			R	R	R	R	R	R	R	R	R	R			ANA	YSIS R	EQUIRED
Haley & A	ldnch			В		SSFL NPDE	S			T	T	T	T										
5333 Missi	on Center Rd Suite 300					rmit 2018			İ	1	1	-	1	1	1	}		क्र	1	}			
San Diego	, CA 92108			Quarterly		II [001, 002, (011, 01	8]		1			Ì					, Bis(2- PCP (SVOCs E625)	1 _	ļ			
Test Ameri	ca Contact: Urvashi Patel			-	O	utfall 002				-	-	1	z		1	-		23	51)				
	an Ave Suite #100					Comp				İ		=	8			1		Ŏ	cury (E245				
Irvine CA 9									1	<u>a</u> a	1	153	후	_				5 8	🗒				
Tel 949-26									1	1 5		Ĭ,	8	5	ĺ			C Big	1 8				
Cell 949-33										(E1613B)	15	₽ P	12	8		ŀ	1	- n	Mer.	j			
									م غذا) (s	18	1 8	1	5	_			ja je	Si	<u> 502</u>			Comments
	ervices under this CoC shall be performed in accordar			Project	Mana	iger: Katheri	ne Mille	er .	overable Metals Zn Cu, Pb, Cd, Se	l E	degrees C) (E405 BODCalc))	5	Nitrite-N, NO3+NO2-	35	8	1		용호	Metais.	eta			
	ient# 2015-18-TestAmerica by and between Haley & A estAmerica Laboratories Inc	vidnon, inc , its subsidiaries a	ina	520.28	9.860	3, 520.904 69	144 (cel	ł)	§ 8	ğ	S S	8	76	₹	Ž	2	~	ate at	2 0	9			
Sampler D				Field	Mana	ger: Mark Do	minick		1 g 6	8	188	Į ĝ	88	8) (8	×	88	09	- 2 ₹	1 8	윤동			
	2-1			978.23	4 503	- 3, 818.599.07	'02 (cel	n	\$53	8	8 8	S	Z S	P	2 (ž) (E	2.5	8	P. e.			
		T			T	1	T	 _	1822	<u> </u>	BOD5 (20 d	Surfactants (MBAS) (SM5540C/E425.1)	Cl-, SO4, Nitrate-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180	TSS (160 2 (SM2540D))	Ammonia-N (350 2)	alpha-BHC (E608)	2,4,6 TCP, 2,4 Dinitrotoluene, ethylhexyi)phthalate, NDMA, R	Recoverable	Total Recoverable Metals: (E200 7) Fe, Mn			
Sample			Sample		# of	Preservative	Bottle	MS/MSC		8	15 5	1 E	β₽	Ę	S	Ĕ	8	9 등	otal	3 2			
Description	Sample I D	Sampling Date/Time	Matrix	Container Type	Cont			<u> </u>	<u> </u>	12	8 6	3	<u> </u>	2	₽	₹	de	4 12 E	₽	<u>6</u> 6	l		
					Π.		T	Ī	"	Ţ			Γ										Outfail 001 analyze for Fe and Mn
			WM	500 mL Poly	1	HNO ₃	90	No	X						ŀ				1	х			Outfails 002 and 011 analyze for Fe only
_ 1			WM	1 L Glass Amber	2	None	110	No	1	×	1	 	 		!	_				1			
o _a			WM	1L Poly	1	None	115	No	† <u>-</u>	1	x	 	├						 	1	 		
Q(WM	500 mt. Poly	2	None	120	No	 	 	 ``	×	 	-	 		1		 				
7		}		· · · · · · · · · · · · · · · · · · ·	1		-	1	+	┼	╁	1 ^	 	 	}	 			}		}		48 hours Holding Time NO3 &
52			WM	500 mL Poly	2	None	130	No					×			<u> </u>							NO2
<u> </u>	Outfall002_20181207_Comp	12/7/2018	WM	500 mL Poly	1	None	150	No					Τ	х									48 hours Holding Time for Tubidity
60	Odd28002_20101201_0011p		WM	500 mL Poly	1	H ₂ SO ₄	160	No	 	+	┼	├	-		 	×	-		 		 		
P		1 /200	NM S		- 2		170			┼	╂	┼	├		 	<u> </u>	x		 		-		
Outfall 002		1000		1 L Glass Amber	1	None		No	 -		╅	 			 		<u> </u>	×	 	ļ	 -		
			WM	1 L Glass Amber	2 '	None	180	No	-	┼	-	├	─		X			^_	 	 			
			WM	1L Poly	1	None	185	No	ļ	╀		┼	<u> </u>	 	├ ^-				ļ				Sample receiving DO NOT OPEN
			İ				ł		1/50	حن ا	h	1	İ		ļ								BAG Bag to be opened in
			A46:	COTOSIIICATE VIZIS	-	HNO.	315	No	fine	ት ፓ፣	e		l	ŀ					X				Mercury Prep using clean
	······································		1		<u> </u>	<u> </u>	1	<u> </u>	1	ļ	1	 	├	<u> </u>	ļ	L.,							procedures
			· WM	1 L Olass Amber	2	None	110	No.		H	1	<u> </u>							<u> </u>				Hold
		٠, ٠,	WM.	- 500 mL Pely	2	None	120	No	Deli	<u> </u>	1	Н											Hold
	Outfall002_20181207_Comp_Extra	12/7/2018	WM_	500 mL-Pely	2	None	130	10-	1/1/	1_			н										Hold
		1		1 L Class Amber	-2	None -	170	No	<u> </u>			<u> </u>	J	<u> </u>			н				Ll		Hold
		مستعاب	WM	1 L Glass Amber	-2	None	190	No.	4			I	Ι					Н	l				Hold
								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,															
Relinguished	By Date/Time By Date/Time By Date/Time By Date/Time	e		Company			Receiv	pd By	i/		Dat	e/T≀me					. 7		Turn-a	ound time	e (Check)		
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Relinquished	By Date/Time	, , , , , , ,	, <u>J</u>	Company	-4	100 -	a dely	ed By	/ / /		Det	e/Time							1	-	,		
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JUV	y) 12901 16	1.10 1		Unin	<u> </u>	79					\mathcal{U}_{-i}	$A \angle A$							Intact		_	O	n ice
Relinquished	By Date/Time	e		Company		_	Receive	ed By			Y/,9X								Store s	amples fo	r 6 month	S	
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2019							1.1	AIR	~ <i>6</i>	4			12/	1/	٠,	4/1			No Lev	ei IV		All Lev	rei IVX
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Haley & Al					Boeing-	SSFL NPDE	S			T	Tε		1	73-8	1))]		
	ion Center Rd Suite 300			ĺ		rmit 2018					重要 %		1	133	+]	1	1			
1				Quarter		II [001, 002, (011, 0	18]			1.98			8	1		l	l			
San Diego,				-		utfall 002			1		(E900 0), otal Comb Radium), CS-137		1 =	(E608)	4	1	1	1	1 1		
	ica Contact. Urvashi Patel					Comp				1	8 = 88	1	1 %				•	1	1 1		
	rian Ave Suite #100									8	9 5 2 5		#	ĕ. S]		1				
Irvine CA				İ						1 8	1 8 8 E.Z.	E	18	1 5	8	8	l	ļ	1 1		
Tel 949-26 Cell 949-3)					1	l E	8889	돭	1 2	8 9	, Q	l û	ł	ĺ			Comments
1									. 8	Ψ	95.58	2	-2°	8 -	1000	8 8	1				
TestAmenca's	services under this CoC shall be performed in accordance 115-18-TestAmerica by and between Haley & Aldrich, Inc.,	with the T&Cs within Blanket S	ervice	Proje	ct Mana	ager: Katheri	ne Mil	er	# B	Į	9856	8 €	靠	1 8 4	\ × 000	SSa					
(Agreement# 20 TestAmenca Lo	115-16-TestAmerica by and between Haley a Aldrich, Inc., aboratories inc	62 SOCOLURIES SIKI MARINO, SI		520.2	89.860	6, 520.904.69	344 (cı	ell) 	م ځ	8	8 2 8 2	20	Ì	1 2 2	2 E	ž š	}	1	1		
				Field	d Mana	ger Mark Do	ominic	k	ترے کا	3	500000000000000000000000000000000000000	123	Jğ	1 4 3	a se	1 5 E	1		1 1		
Sampler:	041			978.2	34.503	3, 818.599 07	702 (ce	ell)	Total Dissolved Metals: (E200.7). Zn (E200 8) Cu, Pb, Cd, St	Cyanide (SM4500-CN-E / E335 2)	Gross Alpha(E900 0), Gross Bata(EE (H-2) (E906 0), Sr-90 (E905 0), Total (E904 0), Uranium (E908 0), K-40, C (E901 0 or E901 1)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Dissolved Metais Mercury (E2451)	Phonty Pollutants-Pestigdes+PCBs	/ Total Recoverable Metals (E200 7): Hardness as CaCO3	Dissolved Metals 1.7) Hardness as CaCO3					
	T				# of	I	Bottle	1	0.00	ğ	30 5 to	122	1 =	} ₽-2	E 8	Total Diss (E200.7)	1	1	1 1		
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	Cont	Preservative	#	MSAMSD	8 2 2 2 E	Į į	62. Jan 199	美品	불	しょう	200	E S	1	1			
1 .				30.7	ļ		├	┼	 	۲	100700	100	+-	 	 - -		 	_			Filter and preserve w/in 24hrs of
Ì	0 03/1602-20181207.CM	1 7.7.18	WM	1 L Poly	1	None	190	No	Į .				Į			×	1	1	1 1		receipt at lab at OFGG1,GG2,G11, or
}	l e				1		<u> </u>			 		↓	ļ	ـــ			-	├	 		018
	2+ fr 1002-2015/207- (up	2.7.14	WM	500 ml. Poly	1	HNO ₃	80	No					1	1	х					i	at OF001,002,011, or 018.
	271416	16-11		300 (312)			<u> </u>		ļ	ļ	ļ			 		 	 	-	╌		Filter and preserve wim 24hrs of
					١.		200	1	×	1	1	1	1	1	}	[1	1 1		receipt at lab at OF001,002,011, or
₩.			WM	1L Poly	1	None	200	No.	1 ^		1		1	ĺ			1	l			018
Page 53 of 60	1						├	 				-		1			1				Chiordane, DDD, DDE, DDT,
ďΣ		[1 L Glass				١	1	1	}	1	1	×	1	1	Ì	}	1 1		dieidan,PCBs,toxaphene at
12	Outfail002_20181207_Comp_F	12/7/2018	WM	Amber	2	None	250	No			1			1 ^	1						OF001,002,011, or 018.
ដ		/1005					<u></u>				ļ	<u> </u>	<u> </u>	ļ			 				
5	-	//*							į .	l	1			1	ļ	1	•	1	1		Sample receiving DO NOT OPEN
Duffall 002)	WM	borosilicate vrais	1	None	320	No		Ì	ĺ		X		1	l					BAG. Bag to be opened in Mercury
ge .				Viais	l	•			<u> </u>		<u> </u>	<u> </u>				<u> </u>	<u> </u>				Prep using clean procedures.
Υ			WM	500 mL Poly	1	NaOH	220	No		Х		_						L			
ĺ			WM	2.5 Gal Cube	1	None	225	No			1			I				I			Unfiltered and unpreserved analysis Separate RAD onto another
		40770040 /		1 L Glass				†	1		x		1			1	1				workorder Analyze duplicate, not
1	OutfallD02_20181207_Comp	12/7/2018	WM	Amber	1	None	230	No]				1		1				1		MS/MSD.
	1	11005	—— —	10101	1	None	235	No		 	1	×	1	 	1						Only test if first or second rain
1	<u></u>		WM	1 Gal Cube	25	INone	235	100	 	_	ļ	<u> ^</u> -	ļ	ļ	⊢ —		┼	 	╌┤		events of the year
				<u> </u>	<u></u>		<u> </u>	<u> </u>	ļ		<u> </u>	<u> </u>	ļ	ļ	<u> </u>		 -	ļ	┝╼┤		
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to IM	MINERIL	L 110	10	-			U	u.	110	T 1	_ •			***	intact _				Un lo	e	***************
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# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-226838-1

Login Number: 226838 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Societionii, fiin		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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# Sacramento Sample Receiving Notes



Job:__ 440-226838 Field S

n the job folder with the COC.	y Seal, Temperature & corrected Temperature &	-	-	
Notes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / H	ACC	o / Otl	ner
	Ice Wet Gel	Othe	r	
	Cooler Custody Seal:Sea			
	Sample Custody Seal:			
	Cooler ID:			
	10	6	1	
	Temp: Observed Corrected		0	
	From: Temp Blank   Sample			
	NCM Filed: Yes □ No			
		Yes	No	NA
	Perchlorate has headspace?	ם		Ø
	Alkalinity has no headspace?			ø
	CoC is complete w/o discrepancies?	Ø		
	Samples received within holding time?	P		D
	Sample preservatives verified?			D
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with?		P	
	Samples w/o discrepancies?	Ø		
	Sample containers have legible labels?	四		
	Containers are not broken or leaking?	pa^		
	Sample date/times are provided.	Ø		
	Appropriate containers are used?	P	ם	
	Sample bottles are completely filled?	Ø	D	
	Zero headspace?*			Ø
	Multiphasic samples are not present?	囡		
	Sample temp OK?	Ø		
	Sample out of temp?		Ø	
	000	10	U	

WZZA

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# Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>

Sent: Tuesday, January 15, 2019 8:16 AM

**To:** Patel, Urvashi

**Cc:** Kim Schultz; elizabeth.wessling@mecx.net

**Subject:** OF002 pesticides

**Importance:** High

Follow Up Flag: Follow up Flag Status: Flagged

**Categories:** Red Category

# -External Email-

Hi Urvashi,

Please report only the pesticides specified on the COC and the NPDES Permit for OF002 440-226838-1 and remove the following pesticides:

Aldrin
beta-BHC
delta-BHC
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Heptachlor
Heptachlor Epoxide
Lindane (gamma-
BHC)



#### Katherine

# **Katherine Miller**

Project Manager

#### Haley Aldrich, Inc.

600 South Meyer Ave. | Suite 100

Tucson, AZ 85701

T: (520) 289.8606

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www.haleyaldrich.com

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# Patel, Urvashi

From: Patel, Urvashi

**Sent:** Wednesday, December 19, 2018 9:42 PM **To:** 'Miller, Katherine'; Nguyen, Jocelyn

**Subject:** RE: TestAmerica Sample Login Confirmation files from 440-226838 Quarterly Outfall 002

Comp

#### Hi Katherine

I'll try to sum up the issues we discussed over the phone today on this sample. Looks like containers were labeled as Comp instead of Comp_F so cyanide, pcb Rad and Tox was not logged in for COMP_F. Containers were received for sample-1 but no NCM was created to note the discrepancy of extra containers received for sample-1. Looking into this further, Beth at ABC confirmed that she already had the samples for outfall 002 COMP as the courier dropped off same day, so we made that analysis within hold time. PCB as been added to sample-1 (past hold) and I'll check on cyanide hold time when I get into work tomorrow. Rad analysis will be added to sample -1 as well. My apologies for not catching the discrepancies after login.

Thanks,

Urvashi

#### **URVASHI PATEL**

Manager of Project Management

## Test America

THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Ave, Suite #100 Irvine, CA 92614 TEL 949-261-1022 | FAX 949-260-3297 DIRECT 949-260-3269 CELL 949-333-9055

www.testamericainc.com

**From:** Miller, Katherine [mailto:KMiller@haleyaldrich.com]

Sent: Wednesday, December 19, 2018 1:53 PM

To: Nguyen, Jocelyn; Patel, Urvashi

Subject: RE: TestAmerica Sample Login Confirmation files from 440-226838 Quarterly Outfall 002 Comp

Importance: High

#### -External Email-

Where is the cyanide, chronic tox, PCBs, pesticides, and rad for this sample?

Katherine Miller HALEY & ALDRICH Tel: 520.289.8606 6

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From: Nguyen, Jocelyn < jocelyn.nguyen@testamericainc.com>

Sent: Monday, December 10, 2018 12:40 PM

**To:** Kim Schultz < <u>kim.schultz@mecx.net</u>>; Miller, Katherine < <u>KMiller@haleyaldrich.com</u>>; Gardiner, Nancy

<NGardiner@haleyaldrich.com>; Urvashi Patel <urvashi.patel@testamericainc.com>

Subject: TestAmerica Sample Login Confirmation files from 440-226838 Quarterly Outfall 002 Comp

Hello,

Attached, please find the Sample Confirmation files for job 440-226838; Quarterly Outfall 002 Comp

The following sample was submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): Outfall002_20181207_Comp_Extra (440-226838-3).

For sample Outfall002_20181207_Comp_F (440-226838-2), only containers for metals were received.

Please feel free to contact me or your PM, Urvashi Patel, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: <a href="Project Feedback">Project Feedback</a>

#### **JOCELYN NGUYEN**

Project Manager Assistant

#### TestAmerica Irvine

THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [487205] Attachments: 5

# Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>
Sent: Thursday, December 20, 2018 8:40 AM

**To:** Patel, Urvashi; Nguyen, Jocelyn

**Subject:** RE: 440-226838-1

# -External Email-

Could you also add dissolved iron? This was not on the COC.

Katherine Miller HALEY & ALDRICH Tel: 520.289.8606

From: Miller, Katherine

Sent: Wednesday, December 12, 2018 11:05 AM

To: urvashi.patel@testamericainc.com; Nguyen, Jocelyn <Jocelyn.Nguyen@testamericainc.com>

Subject: 440-226838-1

Urvashi,

440-226838-1 for Outfall002_20181207_Comp. COC comment specifies only Fe, not Mn. Please make this change.

Katherine

# **Katherine Miller**

Project Manager

#### Haley Aldrich, Inc.

600 South Meyer Ave. | Suite 100 Tucson, AZ 85701

T: (520) 289.8606 C: (520) 904.6944

www.haleyaldrich.com

#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-226838-2

## **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

22 January 2019







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#### **TABLES**

- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



#### . INTRODUCTION

**Task Order Title:** Boeing SSFL NPDES **Contract:** 40458-078 and 40458-083

**MEC^x Project No.:** 1272.003H.01

Sample Delivery Group: 440-226838-2

**Project Manager:** Katherine Miller

Matrix: Water
QC Level: |||

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

#### **TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20181207 _Comp	440-226838-1	N/A	Water	12/07/2018 10:05	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-226838-2:

- The laboratories received the sample in this SDG on ice and within the temperature limits of ≤6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were not initialed or dated. The corrections did not affect data quality.
- Sample containers were transferred to TestAmerica St. Louis laboratory for all radionuclide analyses.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



#### **TABLE 3 - REASON CODE REFERENCE**

	TABLE 3 - REASON CODE	KEFERENCE
Reason Code	Organic	Inorganic
Н	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
А	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. VARIOUS EPA METHODS — RADIONUCLIDES

#### E. Wessling of MEC^x reviewed the SDGs on January 22, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

#### **III.1. HOLDING TIMES:**

The sample was received unpreserved. The sample was acidified and allowed to equilibrate. The sample was prepared within five days of preservation and analyzed following in-growth.

#### III.2. CALIBRATION:

The detector efficiency for gross alpha was less than 20%; therefore, the detected result for gross alpha was qualified as estimated (J-) with a potential negative bias. All other detector efficiencies were greater than 20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits. Calibration checks were not verified at a Level III validation.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. **METHOD BLANKS**

Target isotopes were not detected in the method blanks above the MDA. However, a comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 1% level of confidence for radium-226 and radium-228. The detected sample results for radium-226 and radium-228 were qualified as nondetect (U). No further qualifications were required.

#### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and RPDs were within laboratory-established control limits.

#### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed for cesium-137 and potassium-40 for sample Outfall002_20181207_Comp. Both the sample and duplicate results were nondetect.

#### 111.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

#### III.4. SAMPLE RESULT VERIFICATION:

An EPA Level III review was performed on the sample in this data package. As such, the sample results were not verified. Reported nondetects are valid to the MDC.

#### **III.5. FIELD QC SAMPLES:**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:



#### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS:

This SDG had no identified field blank or equipment blank samples.

#### III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

# Validated Sample Result Forms: 4402268382

Analysis Method E900

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

CAS No Result Total RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes 5.45 *Ш Gross Alpha Analytes GROSSALPHA 22.3 3.00 3.52 pCi/L G Gross Beta Analytes GROSSBETA 16.7 2.89 4.00 2.15 pCi/L

Analysis Method E901.1

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

**MDC** Analyte CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Cesium-137 10045-97-3 3.14 7.71 20.0 13.3 pCi/L U U Potassium-40 13966-00-2 U U 83.1 91.9 139 139 pCi/L

Analysis Method E903.0

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRO

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

Total RL**MDC** Analyte CAS No Result Result Lab Validation Validation Value **Oualifier** Uncert. Units Qualifier Notes 0.262 Radium-226 13982-63-3 0.165 0.212 pCi/L 1.00

Analysis Method E904.0

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

**Analyte** CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-228 15262-20-1 1.36 0.699 1.00 1.02 pCi/L

Monday, January 28, 2019 Page 1 of 2

Analysis Method E905.0

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

**MDC Analyte** CAS No Result Total RLResult Lab Validation Validation Units Value Uncert. **Qualifier Qualifier** Notes pCi/L Strontium-90 10098-97-2 0.453 0.804 3.00 1.36

Analysis Method E906.0

Sample Name OUTFALL002 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

CAS No Result Total RL**MDC Analyte** Result Lab Validation Validation Value Uncert. Units **Oualifier** Qualifier Notes -53.2 Tritium 10028-17-8 166 500 302 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL002_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

RL**MDC** Result **Analyte** CAS No Result **Total** Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Total Uranium **URANIUM** 1.25 1.30 1.00 1.61 pCi/L UG

Analysis Method RADIUM

Sample Name OUTFALL002_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 10:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226838-1

RL**MDC** Analyte CAS No Result Total Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-226 & 228 RADIUM226228 1.36 0.707276 В

Monday, January 28, 2019 Page 2 of 2



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226838-2

Client Project/Site: Quarterly Outfall 002 Comp

#### For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli fatel

Authorized for release by: 1/16/2019 6:43:59 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ·······

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Ushi fatel

Urvashi Patel Manager of Project Management 1/16/2019 6:43:59 PM 4

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226838-1	Outfall002_20181207_Comp	Water	12/07/18 10:05	12/07/18 21:05

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

Job ID: 440-226838-2

**Laboratory: TestAmerica Irvine** 

**Narrative** 

Job Narrative 440-226838-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 2.9° C.

#### Receipt Exceptions

Outfall002 20181207 Comp F (440-226838-2)-Received only containers for metals

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-407614

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: Outfall002 20181207 Comp (440-226838-1). Analytical results are reported with the detection limit achieved.

Method(s) 904.0: Ra-228 Prep Batch 160-406940

The following sample did not meet the requested limit (RL) due to the reduced sample volume attributed to the presence of matrix interferences (see prep NCM 160-157304). The sample was reduced due to black sediment. The data have been reported with this narrative.

Outfall002_20181207_Comp (440-226838-1)

Method(s) A-01-R: Uranium Prep Batch: 160-407549

The uranium detection goals were not met for the following samples due to the reduced aliquot required from the presence of matrix interferences (see prep non-conformance memo: 160-157518): Outfall002 20181207 Comp (440-226838-1) and (MB 160-407549/1-A). Analytical results are reported with the detection limit achieved.

Method(s) ExtChrom: Uranium Prep Batch 160-407549:

Sample Outfall002_20181207_Comp (440-226838-1) was prepped at a lower aliquot due to dark brown discoloration.

Method(s) ExtChrom: Uranium Prep Batch 160-407549:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following sample:Outfall002 20181207 Comp (440-226838-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep_0: Radium-228 Prep Batch 406940:

The following samples were prepared at a reduced aliquot due to black sediment: 480-146991-5, 480-146991-6, 440-226838-1. The following samples were prepared at a reduced aliquot due to yellow discoloration and sulfurous odor 500-156400-1, 500-155886-19. Outfall002 20181207 Comp (440-226838-1)

Method(s) PrecSep-21: Radium-226 Prep Batch 406929:

The following samples were prepared at a reduced aliquot due to limited volume and sediment: 480-146991-3, 480-146991-4. The following samples were prepared at a reduced aliquot due to black sediment: 480-146991-5, 480-146991-6, 440-226838-1.

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

#### Job ID: 440-226838-2 (Continued)

#### **Laboratory: TestAmerica Irvine (Continued)**

The following samples were prepared at a reduced aliquot due to yellow discoloration and sulfurous odor 500-156400-1, 500-155886-19.

Method(s) PrecSep-7: Strontium-89 Prep Batch 407602:

The following sample was prepared at a reduced aliquot due to sediment:

Outfall002_20181207_Comp (440-226838-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Date Collected: 12/07/18 10:05

Date Received: 12/07/18 21:05

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002_20181207_Comp

TestAmerica Job ID: 440-226838-2

Lab Sample ID: 440-226838-1

Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	22.3	G	4.82	5.45	3.00	3.52	pCi/L	12/27/18 10:23	12/31/18 09:31	1
<b>Gross Beta</b>	16.7		2.35	2.89	4.00	2.15	pCi/L	12/27/18 10:23	12/31/18 09:31	1

	thod: 901.1 - Cesium 137 & Other C		Count Total Uncert. Uncert.							
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.14	U	7.70	7.71	20.0	13.3	pCi/L	12/20/18 15:43	12/21/18 07:37	1
Potassium-40	83.1	U	91.6	91.9		139	pCi/L	12/20/18 15:43	12/21/18 07:37	1
_ Method: 903.0 -	Radium-226	(GFPC)								
			Count	Total						

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.262		0.164	0.165	1.00	0.212	pCi/L	12/21/18 08:51	01/14/19 05:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	76.1		40 - 110					12/21/18 08:51	01/14/19 05:33	1

Method: 904.0 - Ra	adium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.36	G	0.688	0.699	1.00	1.02	pCi/L	12/21/18 09:53	01/03/19 11:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	76.1		40 - 110					12/21/18 09:53	01/03/19 11:27	1
Y Carrier	89.3		40 - 110					12/21/18 09:53	01/03/19 11:27	1

Method: 905 - Strontium-90 (GFPC)										
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.453	Ū	0.803	0.804	3.00	1.36	pCi/L	12/27/18 08:51	01/08/19 11:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.4		40 - 110					12/27/18 08:51	01/08/19 11:41	1
Y Carrier	90.8		40 - 110					12/27/18 08:51	01/08/19 11:41	1

Method: 906.0 - Tri	tium, Tota	ıl (LSC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-53.2	$\overline{U}$	166	166	500	302	pCi/L	01/14/19 14:15	01/15/19 05:55	1

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002_20181207_Comp

TestAmerica Job ID: 440-226838-2

Lab Sample ID: 440-226838-1

Matrix: Water

Date Collected: 12/07/18 10:05 Date Received: 12/07/18 21:05

Method: A-01-R	- Isotopic Ur	anium (Al	pha Spectr	ometry)						
	•	•	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	1.25	UG	1.30	1.30	1.00	1.61	pCi/L	12/26/18 11:53	12/27/18 21:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.9		30 - 110					12/26/18 11:53	12/27/18 21:59	1

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

Method	Method Description	Protocol	Laboratory	
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL	
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL	
903.0	Radium-226 (GFPC)	EPA	TAL SL	
904.0	Radium-228 (GFPC)	EPA	TAL SL	
905	Strontium-90 (GFPC)	EPA	TAL SL	
906.0	Tritium, Total (LSC)	EPA	TAL SL	
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL	
Evaporation	Preparation, Evaporation	None	TAL SL	
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL	
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL	
SC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL	
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL	
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL	
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL	

#### **Protocol References:**

DOE = U.S. Department of Energy EPA = US Environmental Protection Agency None = None

#### **Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

Lab Sample ID: 440-226838-1

Matrix: Water

Client Sample ID: Outfall002_20181207_Comp

Date Collected: 12/07/18 10:05 Date Received: 12/07/18 21:05

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			105 mL	1.0 g	407614	12/27/18 10:23	MRB	TAL SL
Total/NA	Analysis	900.0		1			408319	12/31/18 09:31	KLS	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 mL	406889	12/20/18 15:43	PK	TAL SL
Total/NA	Analysis	901.1		1			406923	12/21/18 07:37	KLS	TAL SL
Total/NA	Prep	PrecSep-21			500.20 mL	1.0 g	406929	12/21/18 08:51	HET	TAL SL
Total/NA	Analysis	903.0		1	1.0 mL	1.0 mL	410437	01/14/19 05:33	KLS	TAL SL
Total/NA	Prep	PrecSep_0			500.20 mL	1.0 g	406940	12/21/18 09:53	HET	TAL SL
Total/NA	Analysis	904.0		1			408907	01/03/19 11:27	CDR	TAL SL
Total/NA	Prep	PrecSep-7			249.98 mL	1.0 g	407602	12/27/18 08:51	MMO	TAL SL
Total/NA	Analysis	905		1			409328	01/08/19 11:41	CDR	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	410502	01/14/19 14:15	JDL	TAL SL
Total/NA	Analysis	906.0		1			410707	01/15/19 05:55	RTM	TAL SL
Total/NA	Prep	ExtChrom			50.14 mL	1.0 mL	407549	12/26/18 11:53	KNF	TAL SL
Total/NA	Analysis	A-01-R		1			408013	12/27/18 21:59	ALS	TAL SL

#### **Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-407614/1-A			Client Sample ID: Method Blank
Matrix: Water			Prep Type: Total/NA
Analysis Batch: 408333			Prep Batch: 407614
Count	4	Total	

			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.6321	U	0.677	0.680	3.00	1.10	pCi/L	12/27/18 10:23	12/31/18 09:20	1
Gross Beta	-0.1631	U	0.514	0.514	4.00	0.930	pCi/L	12/27/18 10:23	12/31/18 09:20	1

Lab Sample ID: LCS 160-407614/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** Prep Batch: 407614 **Analysis Batch: 408333** Total Spike LCS LCS Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Gross Alpha 50.9 46.07 6.69 3.00 1.74 pCi/L 73 - 133 90

Lab Sample ID: LCSB 160-407614/3-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA Analysis Batch: 408333 Prep Batch: 407614** Total

Spike LCSB LCSB Uncert. %Rec. Analyte Added  $(2\sigma + / -)$ Limits Result Qual RL **MDC** Unit %Rec Gross Beta 9.22 75 - 125 87.1 86.97 4.00 0.929 pCi/L 100

Lab Sample ID: 440-226822-J-1-G MS **Client Sample ID: Matrix Spike Matrix: Water Prep Type: Total/NA** Prep Batch: 407614

Analysis Batch: 408344 Total

				i Otai				
	Sample Sample	Spike	MS MS	Uncert.				%Rec.
Analyte	Result Qual	Added	Result Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits
Gross Alpha	1.10 U	50.9	38.18	5.35	3.00	1.02 pCi/L	73	60 - 140

Lab Sample ID: 440-226822-J-1-H MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA

Analysis Batch: 408344

•						Total					•		
	Sample	Sample	Spike	MSD	MSD	Uncert.					%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC L	Jnit	%Rec	Limits	RER	Limit
Gross Alpha	1.10	U	50.9	46.14		6.30	3.00	1.16 p	Ci/L	88	60 - 140	0.68	1

Lab Sample ID: 440-226822-J-1-I MSBT Client Sample ID: Matrix Spike

**Matrix: Water Prep Type: Total/NA** Analysis Batch: 408344 **Prep Batch: 407614** 

				Total					
	Sample Sample	Spike	MSBT MSB	T Uncert.				%Rec.	
Analyte	Result Qual	Added	Result Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	
Gross Beta	2.28	87.1	88.52	9.38	4.00	1.06 pCi/L	99	60 - 140	

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**Prep Batch: 407614** 

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

MSBTD MSBTD

Result Qual

87.44

Count

Count

Lab Sample ID: 440-226822-J-1-J MSBTD

Sample Sample

Result Qual

2.28

**Matrix: Water** 

Analyte

Gross Beta

**Analysis Batch: 408344** 

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 407614

Total Uncert. %Rec. **RER**  $(2\sigma + / -)$ RL MDC Unit %Rec Limits **RER** Limit 9.26 4.00 1.04 pCi/L 98 60 - 140 0.06

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Spike

Added

87.1

Lab Sample ID: MB 160-406889/1-A

**Matrix: Water** 

**Analysis Batch: 406921** 

Client Sample ID: Method Blank Prep Type: Total/NA

**Prep Batch: 406889** 

Uncert. Uncert. MB MB Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Cesium-137 2.771 Ū 6.70 6.70 20.0 11.8 pCi/L 12/20/18 15:43 12/21/18 07:34 Potassium-40 -64.27 U 127 127 176 pCi/L 12/20/18 15:43 12/21/18 07:34

Total

Lab Sample ID: LCS 160-406889/2-A

**Matrix: Water** 

**Analysis Batch: 406922** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

**Prep Batch: 406889** 

Total **Spike** LCS LCS Uncert. %Rec. MDC Unit %Rec Analyte Added Result Qual RL Limits  $(2\sigma + / -)$ Americium-241 136000 130600 15100 388 pCi/L 96 90 - 111 Cesium-137 42570 20.0 45100 4270 163 pCi/L 94 90 - 111 Cobalt-60 31200 30030 2970 67.2 pCi/L 96 89 - 110

Lab Sample ID: 440-226838-1 DU

**Matrix: Water** 

**Analysis Batch: 406921** 

Client Sample ID: Outfall002_20181207_Comp

Prep Type: Total/NA

**Prep Batch: 406889** 

Total DU DU Sample Sample Uncert. **RER** Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL **MDC** Unit RER Limit 20.0 Cesium-137 3.14 U -6.196 U 18.7 0.50 11.1 pCi/L 1 Potassium-40 83.1 U 214 0.53 -79.91 U 208 pCi/L

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-406929/19-A

**Matrix: Water** 

**Analysis Batch: 410438** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 406929** 

Total MB MB Uncert. Uncert. Result Qualifier Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ RI **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.01274 U 0.0378 1.00 0.0732 pCi/L 12/21/18 08:51 01/14/19 05:38 0.0378

MB MB

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac Ba Carrier 108 40 - 110 12/21/18 08:51 01/14/19 05:38

TestAmerica Irvine

Prep Type: Total/NA

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-406929/1-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 410437 Prep Batch: 406929** 

Total Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 11.4 10.22 1.04 1.00 0.0809 pCi/L 90 68 - 137

LCS LCS %Yield Qualifier Carrier I imits Ba Carrier 103 40 - 110

Lab Sample ID: 480-146991-E-2-B MSD **Client Sample ID: Matrix Spike Duplicate** 

**Matrix: Water Analysis Batch: 410437** 

**Prep Batch: 406929** Total MSD MSD %Rec. **RER** Sample Sample **Spike** Uncert.

Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit Limits RER Limit %Rec Radium-226 0.528 11.3 9.289 0.966 1.00 0.0803 pCi/L 77 75 - 138 0.10

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 101 40 - 110

Lab Sample ID: 480-146991-F-2-D MS **Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Matrix: Water Analysis Batch: 410437** 

**Prep Batch: 406929** Total

Sample Sample Spike MS MS Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Radium-226 11.4 0.528 9.492 0.998 1.00 0.103 pCi/L 79 75 - 138

MS MS Carrier %Yield Qualifier Limits Ba Carrier 88.5 40 - 110

Lab Sample ID: 500-155886-D-19-B DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 410437** 

Total Sample Sample DU DU Uncert. **RER** Result Qual  $(2\sigma + / -)$ RL Analyte Result Qual **MDC** Unit Limit RER Radium-226 0.293 0.1566 0.112 1.00 0.153 pCi/L 0.56

DU DU Carrier %Yield Qualifier Limits Ba Carrier 69.9 40 - 110

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**Prep Batch: 406929** 

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-406940/19-A

**Matrix: Water** 

Analysis Batch: 408718

**Client Sample ID: Method Blank Prep Type: Total/NA** 

**Prep Batch: 406940** 

		Odunt	iotai					
	MB MB	Uncert.	Uncert.					
Analyte	Result Qual	lifier (2σ+/-)	(2σ+/-)	RL	MDC Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2976	0.193	0.195	1.00	0.292 pCi/L	12/21/18 09:53	01/03/19 11:33	1

Total

Count

MB MB Carrier %Yield Qualifier I imits 40 - 110 Ba Carrier 108 40 - 110 Y Carrier 86.7

Prepared Analyzed Dil Fac <u>12/21/18 09:53</u> <u>01/03/19 11:33</u> 1 12/21/18 09:53 01/03/19 11:33

Lab Sample ID: LCS 160-406940/1-A

**Matrix: Water** 

Analysis Batch: 408907

**Client Sample ID: Lab Control Sample Prep Type: Total/NA** 

**Prep Batch: 406940** 

•				Total					
	Spike	LCS	LCS	Uncert.					%Rec.
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
Radium-228	9.07	8.109		0.973	1.00	0.442	pCi/L	89	56 - 140

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 103 40 - 110 Y Carrier 86.4 40 - 110

Lab Sample ID: 480-146991-E-2-C MSD

Client Sample ID: Matrix Spike Duplicate

**Matrix: Water** 

Analysis Batch: 408907

Prep Type: Total/NA **Prep Batch: 406940** 

					iotai						
	Sample Sample	Spike	MSD	MSD	Uncert.				%Rec.		RER
Analyte	Result Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium-228	0.668	9.06	9.087		1.05	1.00	0.344 pCi/L	93	45 - 150	0.28	1

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 101 40 - 110 40 - 110 Y Carrier 89.7

Lab Sample ID: 480-146991-F-2-F MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

Analysis Batch: 408907

**Prep Type: Total/NA** Prep Batch: 406940 Total

	Sample Samp	ole Spike	MS	MS	Uncert.					%Rec.	
Analyte	Result Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Radium-228	0.668	9.06	9.689		1.14	1.00	0.416	pCi/L	100	45 - 150	

	MS	MS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	88.5		40 - 110
Y Carrier	91.2		40 - 110

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 500-155886-D-19-C DU

**Matrix: Water** 

**Analysis Batch: 408718** 

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

**Prep Batch: 406940** 

Total Sample Sample DU DU Uncert. **RER Analyte** Result Qual Result Qual  $(2\sigma + / -)$ RL MDC Unit RER Limit Radium-228 0.635 0.4161 U 0.432 1.00 0.701 pCi/L 0.27

DU DU

Carrier %Yield Qualifier I imits Ba Carrier 69.9 40 - 110 Y Carrier 84.5 40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-407602/16-A

**Matrix: Water** 

**Analysis Batch: 409573** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 407602** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Strontium-90 0.3319 0.164 0.166 3.00 0.238 pCi/L 12/27/18 08:51 01/08/19 11:51

MB MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Sr Carrier 89.1 40 - 110 12/27/18 08:51 01/08/19 11:51 Y Carrier 96.1 40 - 110 12/27/18 08:51 01/08/19 11:51

Lab Sample ID: LCS 160-407602/1-A

**Matrix: Water** 

**Analysis Batch: 409328** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 407602** 

Total Spike LCS LCS Uncert. %Rec. Added  $(2\sigma + / -)$ RL MDC Unit Limits Analyte Result Qual %Rec Strontium-90 8.13 9.019 0.933 3.00 0.346 pCi/L 111 75 - 125

LCS LCS

Carrier %Yield Qualifier Limits Sr Carrier 90.6 40 - 110 Y Carrier 87.1 40 - 110

Lab Sample ID: LCSD 160-407602/2-A

**Matrix: Water** 

Analysis Batch: 409328

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Prep Batch: 407602** 

Total LCSD LCSD Spike Uncert. %Rec. **RFR** Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Strontium-90 8.13 8.318 0.858 3.00 0.280 pCi/L 102 75 ₋ 125 0.39

LCSD LCSD

Carrier %Yield Qualifier Limits Sr Carrier 90.3 40 - 110 93.5 40 - 110 Y Carrier

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Client Sample ID: Method Blank

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-410502/1-A

**Matrix: Water** 

Analyte

Analyte

Tritium

Tritium

Analyte

Tritium

**Analysis Batch: 410707** 

Count Total мв мв Uncert. Uncert.

Result Qualifier  $(2\sigma + / -)$ 85.59 U 183

 $(2\sigma + / -)$ 

183

RL 500

Total

Total

Uncert.

 $(2\sigma + / -)$ 

11400

Total

Uncert.

 $(2\sigma + / -)$ 

163

RL

1.00

**MDC** Unit 314 pCi/L Prepared

Analyzed 01/14/19 14:15 01/14/19 22:00

**Client Sample ID: Lab Control Sample** 

Dil Fac

Prep Type: Total/NA

**Prep Batch: 410502** 

Prep Type: Total/NA

**Prep Batch: 410502** 

Prep Type: Total/NA

Prep Batch: 410502

RER

0.06

Prep Type: Total/NA

Prep Batch: 407549

Analyzed

Analyzed

Prep Type: Total/NA

**Prep Batch: 410502** 

Lab Sample ID: LCS 160-410502/2-A

**Matrix: Water** 

**Analysis Batch: 410707** 

Spike

Added

2650

Spike

Added

2650

LCS LCS Result Qual 2545

MS MS

DU DU

Result Qual

-58.11 U

Result Qual

127500

Uncert.  $(2\sigma + / -)$ 399

RL 500

RL

500

RL

500

**MDC** Unit

pCi/L

1.81

MDC Unit 302 pCi/L

**MDC** Unit

314 pCi/L

**MDC** Unit

298 pCi/L

%Rec 96

%Rec

255

74 - 114

%Rec.

I imits

**Client Sample ID: Matrix Spike** 

%Rec.

Limits

Client Sample ID: Method Blank

12/26/18 11:53 12/27/18 21:58

12/26/18 11:53 12/27/18 21:58

**Client Sample ID: Lab Control Sample** 

%Rec.

Limits

67 - 130

**Client Sample ID: Duplicate** 

Lab Sample ID: 160-32599-B-11-B MS

**Matrix: Water** 

**Analysis Batch: 410707** 

Sample Sample

Analyte Result Qual Tritium 121000

Lab Sample ID: 160-32599-B-1-B DU

**Matrix: Water Analysis Batch: 410707** 

Sample Sample Result Qual Analyte

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-407549/1-A

-38.7 U

**Matrix: Water** 

**Analysis Batch: 408062** 

**Total Uranium** 1.284 UG MB MR

Lab Sample ID: LCS 160-407549/2-A

Tracer %Yield Uranium-232 97.4

**Matrix: Water** Analysis Batch: 407982 Qualifier

Limits 30 - 110

Count

Uncert.

 $(2\sigma + / -)$ 

1.53

Total

Uncert.

 $(2\sigma + / -)$ 

1.53

Total Spike LCS LCS Uncert.

Analyte Uranium-234 127 125.8 Uranium-238

MB MB

Result Qualifier

Added Result Qual

130 146.5  $(2\sigma + / -)$ RL 15.9 17.7

1.00 1.00

1.70 pCi/L

MDC Unit

1.89 pCi/L

99 112

Prepared

Prepared

%Rec 75 - 125 75 - 125

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Prep Type: Total/NA

**Prep Batch: 407549** 

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**RER** 

Limit

Dil Fac

Dil Fac

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

# Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

**Client Sample ID: Lab Control Sample Prep Type: Total/NA** 

**Prep Batch: 407549** 

Lab Sample ID: LCS 160-407549/2-A

**Matrix: Water** 

**Matrix: Water** 

Tracer

Uranium-232

**Analysis Batch: 407982** 

LCS LCS

Tracer %Yield Qualifier Limits Uranium-232 76.7 30 - 110

Lab Sample ID: LCSD 160-407549/3-A

**Client Sample ID: Lab Control Sample Dup** 

**Prep Type: Total/NA** 

**Prep Batch: 407549** 

Analysis Batch: 407994 Total Spike LCSD LCSD %Rec. **RER** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits RER Limit 125.7 1.00 99 Uranium-234 127 15.4 1.43 pCi/L 75 - 125 0 1 Uranium-238 127.4 15.6 1.00 1.54 pCi/L 98 75 - 125 130 0.57

> LCSD LCSD %Yield Qualifier Limits 71.6 30 - 110

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-406889/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-406889/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-226838-1 DU	Outfall002_20181207_Comp	Total/NA	Water	Fill_Geo-0	

#### **Prep Batch: 406929**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	PrecSep-21	
MB 160-406929/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-406929/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-146991-E-2-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	
480-146991-F-2-D MS	Matrix Spike	Total/NA	Water	PrecSep-21	
500-155886-D-19-B DU	Duplicate	Total/NA	Water	PrecSep-21	

#### **Prep Batch: 406940**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	PrecSep_0	<del>-</del>
MB 160-406940/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-406940/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-146991-E-2-C MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	
480-146991-F-2-F MS	Matrix Spike	Total/NA	Water	PrecSep_0	
500-155886-D-19-C DU	Duplicate	Total/NA	Water	PrecSep_0	

#### **Prep Batch: 407549**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	ExtChrom	
MB 160-407549/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-407549/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-407549/3-A	Lab Control Sample Dup	Total/NA	Water	FxtChrom	

#### **Prep Batch: 407602**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	PrecSep-7	
MB 160-407602/16-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-407602/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
LCSD 160-407602/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-7	

#### **Prep Batch: 407614**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	Evaporation	
MB 160-407614/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-407614/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-407614/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-226822-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-226822-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-226822-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-226822-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

#### **Prep Batch: 410502**

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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	LSC_Dist_Susp	

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

# Rad (Continued)

### Prep Batch: 410502 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-410502/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-410502/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-32599-B-11-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-32599-B-1-B DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

#### **Qualifiers**

#### Rad

TEQ

Toxicity Equivalent Quotient (Dioxin)

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
₹L	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
ΓEF	Toxicity Equivalent Factor (Dioxin)

TestAmerica Irvine

Page 20 of 29

## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc. TestAmerica Job ID: 440-226838-2

Project/Site: Quarterly Outfall 002 Comp

#### **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

## Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-19
lowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18 *
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

^{*} Accreditation/Certification renewal pending - accreditation/certification considered valid.



440-226838 Chain of Custody

Client Nam	ne/Address					Project.			R	R	R	R	R	R	R	R	R	R			ANAL	YSIS R	EQUIRED
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#### TestAmerica Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

**Chain of Custody Record** 



<u>TestAmerica</u>

HE LEADED IN ENVIRONMENTAL TESTING

Phone (949) 261-1022 Fax (949) 260-3297  Client Information (Sub Contract Lab)	Sampler:			Lab F	M: I, Urva	ashi			Carrier Trac	cking No(s):		COC No: 440-130570.1				
Client Contact:	Phone:			E-Ma	il:				State of Ori			Page:				
Shipping/Receiving				urva		_	estamericair Required (Se		California			Page 1 of 1				
Company: TestAmerica Laboratories, Inc.							ram - Califor					440-226838-2				
Address:	Due Date Requeste 12/26/2018	ed:						Analysis	Requested			Preservation Co.	les:			
880 Riverside Parkway, , City:	TAT Requested (da	avs):				1	<del> '</del>	Allalysis	Requesteu			A - HCL B - NaOH	M - Hexane N - None			
West Sacramento						sis sis				H 11		C - Zn Acetate	O - AsNaO2			
State, Zip: CA, 95605					8	w/ Totals						D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O4S Q - Na2SO3 R - Na2S2O3			
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:				6	d List						G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrat			
Email:	WO#:				Yes or N	Standard List					2	I - Ice J - DI Water	U - Acetone V - MCAA			
Project Name: Quarterly Outfall 002 Comp	Project #: 44009879				e (Yes	Δ,					taine	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)			
Site	ssow#:				SD (Y	Sox_Sep					of cor	Other:				
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (w=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered S Perform MS/M:	38					Total Number	Special In	structions/Note:			
	=><	$>\!\!<$		ation Code:	$\boxtimes \times$					The same						
Outfall002_20181207_Comp (440-226838-1)	12/7/18	10:05 Pacific		Water		Х					2	See QAS, Boeing Boeing glassware	_w/u to zero, ug/L; Use			
Note: Since laboratory accreditations are subject to change, TestAmeric, currently maintain accreditation in the State of Origin listed above for ana Laboratories, Inc. attention immediately. If all requested accreditations a	lysis/tests/matrix being analy	zed, the sam	ples must be s	shipped back to	the Tes	tAmeric	ca laboratory o	r other instruct	ions will be provid							
Possible Hazard Identification					Sa	ample	Disposal (	A fee may	be assessed	if samples a	re retair	ned longer than	month)			
Unconfirmed							eturn To Cli	-	Disposal By			nive For	Months			
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Delivera	able Rank:	2		Sp		Instructions		ements:	7 7						
Empty Kit Relinquished by:	1 1	Date:\			Time	:			Metho	od of Shipment:						
Empty Kit Relinquished by: Relinquished by: Relinquished by:	Date/Time:	6(1)	700	Company	IN		eived by:	rime	h	Date/Time		1000	Company Company			
							(/									
Relinquished by:	Date/Time:			Company		Rece	eived by:			Date/Time	E		Company			

Client: Haley & Aldrich, Inc. Job Number: 440-226838-2

Login Number: 226838 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Societisioni, Tim		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Job Number: 440-226838-2

Login Number: 226838 List Number: 3 List Source: TestAmerica St. Louis List Creation: 12/20/18 12:36 PM

Creator: Hellm, Michael

Question Answer Commen
Radioactivity wasn't checked or is = background as measured by a survey  True meter.</td
The cooler's custody seal, if present, is intact.  N/A
Sample custody seals, if present, are intact.  N/A
The cooler or samples do not appear to have been compromised or tampered with.
Samples were received on ice. N/A
Cooler Temperature is acceptable. True
Cooler Temperature is recorded. True 19.0
COC is present. True
COC is filled out in ink and legible.
COC is filled out with all pertinent information.
Is the Field Sampler's name present on COC? N/A
There are no discrepancies between the containers received and the COC. True
Samples are received within Holding Time (excluding tests with immediate True HTs)
Sample containers have legible labels. True
Containers are not broken or leaking.
Sample collection date/times are provided.
Appropriate sample containers are used. True
Sample bottles are completely filled. True
Sample Preservation Verified.
There is sufficient vol. for all requested analyses, incl. any requested  MS/MSDs  True
Containers requiring zero headspace have no headspace or bubble is N/A <6mm (1/4").
Multiphasic samples are not present. N/A
Samples do not require splitting or compositing.
Residual Chlorine Checked. N/A

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

Method: 903.0 - Radium-226 (GFPC)

**Matrix: Water** Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ba Carrier	
ab Sample ID	Client Sample ID	(40-110)	
40-226838-1	Outfall002_20181207_Comp	76.1	
80-146991-E-2-B MSD	Matrix Spike Duplicate	101	
80-146991-F-2-D MS	Matrix Spike	88.5	
600-155886-D-19-B DU	Duplicate	69.9	
.CS 160-406929/1-A	Lab Control Sample	103	
/IB 160-406929/19-A	Method Blank	108	
Tracer/Carrier Legend			

Method: 904.0 - Radium-228 (GFPC)

**Matrix: Water** Prep Type: Total/NA

				Percent Yield (Acceptance Limit
		Ba Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-226838-1	Outfall002_20181207_Comp	76.1	89.3	
480-146991-E-2-C MSD	Matrix Spike Duplicate	101	89.7	
480-146991-F-2-F MS	Matrix Spike	88.5	91.2	
500-155886-D-19-C DU	Duplicate	69.9	84.5	
LCS 160-406940/1-A	Lab Control Sample	103	86.4	
MB 160-406940/19-A	Method Blank	108	86.7	
Tracer/Carrier Legend				
Ba Carrier = Ba Carrier				

Method: 905 - Strontium-90 (GFPC)

**Matrix: Water** Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Sr Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-226838-1	Outfall002_20181207_Comp	83.4	90.8	
LCS 160-407602/1-A	Lab Control Sample	90.6	87.1	
LCSD 160-407602/2-A	Lab Control Sample Dup	90.3	93.5	
MB 160-407602/16-A	Method Blank	89.1	96.1	

Tracer/Carrier Legend Sr Carrier = Sr Carrier

Y Carrier = Y Carrier

Y Carrier = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Matrix: Water** Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
		ranium-23	
Lab Sample ID	Client Sample ID	(30-110)	
440-226838-1	Outfall002_20181207_Comp	75.9	
LCS 160-407549/2-A	Lab Control Sample	76.7	

TestAmerica Irvine

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## **Tracer/Carrier Summary**

Client: Haley & Aldrich, Inc.

Uranium-232 = Uranium-232

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		ranium-23	
Lab Sample ID	Client Sample ID	(30-110)	
LCSD 160-407549/3-A	Lab Control Sample Dup	71.6	
MB 160-407549/1-A	Method Blank	97.4	

4

7

9

11

12

14



# Sacramento Sample Receiving Notes



Job:_

440-226838 Field Sheet

Notes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / HA	ACCP	/ Otl	ner
	Ice Wet Gel	Other		
	Soci			
	Sample Custody Seal:			
	Cooler ID:			
	1 (	£	1	
	Temp: Observed Corrected		0	
	From: Temp Blank  Sample			
	NCM Filed: Yes □ No I			
		Yes	No	NA
	Perchlorate has headspace?	D		Ø
	Alkalinity has no headspace?	D		ø
	CoC is complete w/o discrepancies?	Ø		
	Samples received within holding time?	P		D
	Sample preservatives verified?	ם		0
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with?		D.	
	Samples w/o discrepancies?	Ø		
	Sample containers have legible labels?	四		
	Containers are not broken or leaking?	P		
	Sample date/times are provided.	Ø		
	— Appropriate containers are used?	P	D	D
	Sample bottles are completely filled?	Ø		
	Zero headspace?*			Ø
	Multiphasic samples are not present?	囡		
	Sample temp OK?	Ø		
	Sample out of temp?	D	Ø	D

1022A

#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226838-3

#### **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

14 January 2019





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- 2 Data Qualifier Reference
- 3 Reason Code Reference



#### . INTRODUCTION

**Task Order Title:** Boeing SSFL NPDES **Contract:** 40458-078 and 40458-083 **MEC^x Project No.:** 1272.003D.01 002

Sample Delivery Group: 440-226838-3

**Project Manager:** Katherine Miller

Matrix: Water
QC Level: IV

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20181207_	440-226838-1	N/A	Water	12/07/2018	E1613B
Comp	110 220030 1			10:05 AM	



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226838-3:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the original and transfer COCs.
- The transfer COC to TA-West Sacramento noted custody seals were present and intact on the cooler.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



#### **TABLE 3 - REASON CODE REFERENCE**

Reason	TABLE 3 - REASON CODE	
Code	Organic	Inorganic
Н	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
А	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. EPA METHOD 1613B — DIOXIN/FURANS

#### L. Calvin of MEC^x reviewed the SDG on January 14, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

#### **III.1. HOLDING TIMES**

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### **III.2. INSTRUMENT PERFORMANCE**

Instrument performance criteria were met. Following are findings associated with instrument performance:

#### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

#### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs  $\leq$ 20% for the 15 native compounds (calibration by isotope dilution) and  $\leq$ 35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### **III.4. QUALITY CONTROL SAMPLES**

#### |||.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, OCDD, and OCDF, and for totals TCDF, HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the RL were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. Results for totals



HpCDD, HpCDF, HxCDD, HxCDF, and TCDF were qualified as estimated (J) as they contained one or more peaks not present in the method blank.

#### III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of ≤50%.

#### III.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### **III.7. COMPOUND IDENTIFICATION**

Compound identification was verified. Detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was detected in the initial analysis of the sample; however, the detect was not confirmed by second-column analysis. Both initial and confirmation analyses were reported. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the initial result was rejected (R) in favor of the nondetect confirmation result.

#### III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

The isomers reported as EMPCs were all previously qualified as nondetects for method blank contamination and were not further qualified as EMPCs. Totals HpcDF, HxCDD, HxCDF, and TCDF contained both EMPC peaks and non-EMPC peaks, and were qualified as estimated (J).

## Validated Sample Result Forms: 4402268383

Analysis Method: E1613B

Sample Name Ou	ntfall002_20181207_Com	p	Matrix Ty	pe: W R	Result Typ	e: TRG		
Lab Sample Name:	440-226838-1 <b>San</b>	nple Date/Time:	12/07/2018	10:05		Validatio	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.0000060	0.00000030	0.000047	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.0000013	0.00000022	0.000047	ug/L	J,DXqMB	U	В
1,2,3,4,7,8,9-HpCDF	55673-89-7		0.00000027	0.000047	ug/L	U	U	
1,2,3,4,7,8-HxCDD	39227-28-6	0.0000016	0.00000021	0.000047	ug/L	J,DXMB	U	В
1,2,3,4,7,8-HxCDF	70648-26-9	0.00000048	0.00000018	0.000047	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-HxCDD	57653-85-7	0.00000029	0.00000019	0.000047	ug/L	J,DXqMB	U	В
1,2,3,6,7,8-HxCDF	57117-44-9	0.00000028	0.00000016	0.000047	ug/L	J,DXMB	U	В
1,2,3,7,8,9-HxCDD	19408-74-3	0.00000074	0.00000019	0.000047	ug/L	J,DXqMB	U	В
,2,3,7,8,9-HxCDF	72918-21-9	0.00000042	0.00000011	0.000047	ug/L	J,DXMB	U	В
,2,3,7,8-PeCDD	40321-76-4	0.00000043	0.00000024	0.000047	ug/L	J,DX	J	DNQ
,2,3,7,8-PeCDF	57117-41-6		0.00000023	0.000047	ug/L	U	U	
2,3,4,6,7,8-HxCDF	60851-34-5	0.00000024	0.00000011	0.000047	ug/L	J,DX	J	DNQ
2,3,4,7,8-PeCDF	57117-31-4		0.00000026	0.000047	ug/L	U	U	
2,3,7,8-TCDD	1746-01-6	0.0000034	0.00000030	0.0000094	ug/L	J,DX	J	DNQ
2,3,7,8-TCDF	51207-31-9		0.00000075	0.0000094	ug/L	U	U	
2,3,7,8-TCDF	51207-31-9	0.00000050	0.00000010	0.0000094	ug/L	J,DXMB	R	D
OCDD	3268-87-9	0.000051	0.00000049	0.000094	ug/L	J,DXMB	U	В
OCDF	39001-02-0	0.0000048	0.00000034	0.000094	ug/L	J,DXMB	U	В
Гotal HpCDD	37871-00-4	0.000013	0.00000030	0.000047	ug/L	J,DXMB	J	B, DNQ
Гotal HpCDF	38998-75-3	0.0000027	0.00000022	0.000047	ug/L	J,DXqMB	J	B, DNQ, *II
Γotal HxCDD	34465-46-8	0.0000039	0.00000019	0.000047	ug/L	J,DXqMB	J	B, DNQ, *II
Total HxCDF	55684-94-1	0.0000018	0.00000011	0.000047	ug/L	J,DXqMB	J	B, DNQ, *II
Total PeCDD	36088-22-9	0.00000043	0.00000024	0.000047	ug/L	J,DX	J	DNQ
Total PeCDF	30402-15-4		0.00000023	0.000047	ug/L	U	U	
Total TCDD	41903-57-5	0.0000034	0.00000030	0.0000094	ug/L	J,DX	J	DNQ
Total TCDF	55722-27-5	0.00000095	0.00000010	0.0000094	ug/L	J,DXqMB	J	B, DNQ, *II

Thursday, January 17, 2019 Page 1 of 1



THE LEADER IN ENVIRONMENTAL TESTING

## **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226838-3

Client Project/Site: Quarterly Outfall 002 Comp

#### For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli Patel

Authorized for release by: 1/9/2019 5:28:53 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ······

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Total Access

**Have a Question?** 



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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226838-1	Outfall002_20181207_Comp	Water	12/07/18 10:05	12/07/18 21:05

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

Job ID: 440-226838-3

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-226838-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 2.9° C.

#### **Receipt Exceptions**

Outfall002_20181207_Comp_F (440-226838-2)-Received only containers for metals

#### Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### **Dioxin Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Date Collected: 12/07/18 10:05

Date Received: 12/07/18 21:05

13C-1,2,3,4,7,8-HxCDD

56

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002_20181207_Comp

TestAmerica Job ID: 440-226838-3

Lab Sample ID: 440-226838-1

**Matrix: Water** 

Method: 1613B - Dioxins Analyte	•	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000034	J,DX	0.0000094	0.0000003	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,7,8-PeCDD	0.00000043	J,DX	0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,7,8-PeCDF	ND		0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
2,3,4,7,8-PeCDF	ND		0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,4,7,8-HxCDD	0.0000016	J,DX MB	0.000047	6 0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,6,7,8-HxCDD	0.00000029	J,DX q MB	0.000047	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,7,8,9-HxCDD	0.0000074	J,DX q MB	0.000047	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,4,7,8-HxCDF	0.00000048	J,DX	0.000047	9 0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,6,7,8-HxCDF	0.00000028	J,DX MB	0.000047	8 0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,7,8,9-HxCDF	0.00000042	J,DX MB	0.000047	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
2,3,4,6,7,8-HxCDF	0.00000024	J,DX	0.000047	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,4,6,7,8-HpCDD	0.0000060	J,DX MB	0.000047	0.0000003	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,4,6,7,8-HpCDF	0.0000013	J,DX q MB	0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
1,2,3,4,7,8,9-HpCDF	ND		0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
OCDD	0.000051	J,DX MB	0.000094	0.0000004	ug/L		12/13/18 08:34	12/19/18 20:22	1
OCDF	0.0000048	J,DX MB	0.000094	0.0000003	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total TCDD	0.0000034	J,DX	0.0000094	0.0000003	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total TCDF	0.00000095	J,DX q MB	0.0000094	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total PeCDD	0.0000043	J,DX	0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total PeCDF	ND		0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total HxCDD	0.0000039	J,DX q MB	0.000047	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total HxCDF	0.0000018	J,DX q MB	0.000047	0.0000001	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total HpCDD	0.000013	J,DX MB	0.000047	0.0000003	ug/L		12/13/18 08:34	12/19/18 20:22	1
Total HpCDF	0.0000027	J,DX q MB	0.000047	0.0000002	ug/L		12/13/18 08:34	12/19/18 20:22	1
Isotope Dilution	%Recovery	Qualifier	Limits	2			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	66		25 - 164				•	12/19/18 20:22	1
13C-2,3,7,8-TCDF	70		24 - 169					12/19/18 20:22	1
13C-1,2,3,7,8-PeCDD	65		25 - 181					12/19/18 20:22	1
13C-1,2,3,7,8-PeCDF	63		24 - 185					12/19/18 20:22	
13C-2,3,4,7,8-PeCDF	58		21 - 178					12/19/18 20:22	1
100 2,0,1,01 0001	J0 		21-110				10/10/10 00:04	40/40/40 00:00	,

32 - 141

TestAmerica Irvine

12/13/18 08:34 12/19/18 20:22

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

Lab Sample ID: 440-226838-1

Prepared

Analyzed

<u>12/13/18 08:34</u> <u>12/24/18 16:24</u>

Matrix: Water

Client Sample ID: Outfall002_20181207_Comp

Date Collected: 12/07/18 10:05 Date Received: 12/07/18 21:05

Surrogate

37CI4-2,3,7,8-TCDD

Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	61		28 - 130				12/13/18 08:34	12/19/18 20:22	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				12/13/18 08:34	12/19/18 20:22	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123				12/13/18 08:34	12/19/18 20:22	1
13C-1,2,3,7,8,9-HxCDF	71		29 - 147				12/13/18 08:34	12/19/18 20:22	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136				12/13/18 08:34	12/19/18 20:22	1
13C-1,2,3,4,6,7,8-HpCDD	69		23 - 140				12/13/18 08:34	12/19/18 20:22	1
13C-1,2,3,4,6,7,8-HpCDF	63		28 - 143				12/13/18 08:34	12/19/18 20:22	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138				12/13/18 08:34	12/19/18 20:22	1
13C-OCDD	47		17 - 157				12/13/18 08:34	12/19/18 20:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD	109		35 - 197				12/13/18 08:34	12/19/18 20:22	1
Method: 1613B - Dioxins	and Furans (HR	GC/HRMS	) - RA						
Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000094	0.000007	ug/L		12/13/18 08:34	12/24/18 16:24	1
				5					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169				12/13/18 08:34	12/24/18 16:24	

Limits

35 - 197

%Recovery Qualifier

82

5

7

0

10

11

13

## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC

#### **Protocol References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

#### **Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica Irvine

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002_20181207_Comp

TestAmerica Job ID: 440-226838-3

Lab Sample ID: 440-226838-1

**Matrix: Water** 

Date Collected: 12/07/18 10:05 Date Received: 12/07/18 21:05

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			1064.3 mL	20 uL	264993	12/13/18 08:34	ITH	TAL SAC
Total/NA	Analysis	1613B		1			266436	12/19/18 20:22	AS	TAL SAC
Total/NA	Prep	1613B	RA		1064.3 mL	20 uL	264993	12/13/18 08:34	ITH	TAL SAC
Total/NA	Analysis	1613B	RA	1			267413	12/24/18 16:24	KSS	TAL SAC

#### **Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## QC Sample Results

Client: Haley & Aldrich, Inc.

Total HxCDD

Total HxCDF

Total HpCDD

Total HpCDF

Project/Site: Quarterly Outfall 002 Comp

Lab Sample ID: MB 320-264993/1-A

TestAmerica Job ID: 440-226838-3

Client Sample ID: Method Blank

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA **Analysis Batch: 266136 Prep Batch: 264993** MB MB Result Qualifier RL **EDL** Unit Dil Fac **Analyte** Prepared Analyzed 0.000010 12/13/18 08:34 12/19/18 05:04 2,3,7,8-TCDD ND 0.0000002 ug/L 0.000000723 J,DX 2,3,7,8-TCDF 0.000010 0.0000001 ug/L 12/13/18 08:34 12/19/18 05:04 1,2,3,7,8-PeCDD ND 0.000050 0.0000003 ug/L 12/13/18 08:34 12/19/18 05:04 1.2.3.7.8-PeCDF ND 0.000050 0.0000002 ug/L 12/13/18 08:34 12/19/18 05:04 0.000050 12/13/18 08:34 12/19/18 05:04 2,3,4,7,8-PeCDF ND 0.0000002 ug/L 1,2,3,4,7,8-HxCDD 0.00000169 J,DX q 0.000050 0.0000004 ug/L 12/13/18 08:34 12/19/18 05:04 0.000050 1,2,3,6,7,8-HxCDD 0.000000854 J,DX 0.0000003 ug/L 12/13/18 08:34 12/19/18 05:04 1,2,3,7,8,9-HxCDD 0.00000226 J,DX 0.000050 0.0000003 ug/L 12/13/18 08:34 12/19/18 05:04 ND 0.0000002 ug/L 1,2,3,4,7,8-HxCDF 0.000050 12/13/18 08:34 12/19/18 05:04 1,2,3,6,7,8-HxCDF 0.000000364 J,DX q 0.000050 12/13/18 08:34 12/19/18 05:04 0.0000002 ug/L 0.000000663 J,DX q 1,2,3,7,8,9-HxCDF 0.000050 0.0000001 ug/L 12/13/18 08:34 12/19/18 05:04 2,3,4,6,7,8-HxCDF ND 0.000050 0.0000001 ug/L 12/13/18 08:34 12/19/18 05:04 0.00000555 J,DX 0.000050 12/13/18 08:34 12/19/18 05:04 1,2,3,4,6,7,8-HpCDD 0.0000004 ug/L 1,2,3,4,6,7,8-HpCDF 0.00000357 J,DX q 0.000050 12/13/18 08:34 12/19/18 05:04 0.0000003 ug/L 1,2,3,4,7,8,9-HpCDF 0.00000186 J,DX q 0.000050 12/13/18 08:34 12/19/18 05:04 0.0000004 ug/L OCDD 0.0000975 J,DX 0.00010 0.0000010 ug/L 12/13/18 08:34 12/19/18 05:04 **OCDF** 12/13/18 08:34 12/19/18 05:04 0.0000138 J.DX 0.00010 0.0000005 ug/L **Total TCDD** 0.000010 12/13/18 08:34 12/19/18 05:04 ND 0.0000002 ug/L **Total TCDF** 0.000000723 J,DX 0.000010 0.0000001 ug/L 12/13/18 08:34 12/19/18 05:04 Total PeCDD ND 0.000050 0.000003 ug/L 12/13/18 08:34 12/19/18 05:04 Total PeCDF ND 0.000050 ug/L 12/13/18 08:34 12/19/18 05:04

	MB MB		•		
Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	77	25 - 164	12/13/18 08:34	12/19/18 05:04	1
13C-2,3,7,8-TCDF	76	24 - 169	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,7,8-PeCDD	65	25 - 181	12/13/18 08:34	12/19/18 05:04	1

0.000050

0.000050

0.000050

0.000050

0.00000481 J,DX q

0.00000103 J,DX q

0.0000116 J,DX

0.00000658 J,DX q

0.0000002

0.0000003

0.0000002

0.0000004 ug/L

0.0000003 ug/L

ug/L

ua/L

TestAmerica Irvine

12/19/18 05:04

12/19/18 05:04

12/13/18 08:34 12/19/18 05:04

12/13/18 08:34 12/19/18 05:04

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12/13/18 08:34

12/13/18 08:34

TestAmerica Job ID: 440-226838-3

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-264993/1-A **Client Sample ID: Method Blank Matrix: Water Prep Type: Total/NA Analysis Batch: 266136 Prep Batch: 264993** MB MB Isotope Dilution %Recovery Qualifier Dil Fac Limits Prepared Analyzed 13C-1,2,3,7,8-PeCDF <u>12/13/18 08:34</u> <u>12/19/18 05:04</u> 67 24 - 185 13C-2,3,4,7,8-PeCDF 63 21 - 178 12/13/18 08:34 12/19/18 05:04 74 12/13/18 08:34 12/19/18 05:04 13C-1,2,3,4,7,8-HxCDD 32 - 141 13C-1,2,3,6,7,8-HxCDD 74 28 - 130 12/13/18 08:34 12/19/18 05:04 13C-1,2,3,4,7,8-HxCDF 70 26 - 152 12/13/18 08:34 12/19/18 05:04 13C-1,2,3,6,7,8-HxCDF 70 26 - 123 12/13/18 08:34 12/19/18 05:04 80 29 - 147 12/13/18 08:34 12/19/18 05:04 13C-1,2,3,7,8,9-HxCDF 13C-2,3,4,6,7,8-HxCDF 75 28 - 136 12/13/18 08:34 12/19/18 05:04 13C-1,2,3,4,6,7,8-HpCDD 84 23 - 140 12/13/18 08:34 12/19/18 05:04 83 28 - 143 13C-1,2,3,4,6,7,8-HpCDF 12/13/18 08:34 12/19/18 05:04 13C-1,2,3,4,7,8,9-HpCDF 85 26 - 138 12/13/18 08:34 12/19/18 05:04 13C-OCDD 53 17 - 157 12/13/18 08:34 12/19/18 05:04

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 37CI4-2,3,7,8-TCDD 105 35 - 197 12/13/18 08:34 12/19/18 05:04

Lab Sample ID: LCS 320-264993/2-A

**Matrix: Water** 

**Analysis Batch: 266136** 

Client Sample ID: Lab Control Sample Prep Type: Total/NA Prep Batch: 264993

7 manyolo Batom 200100	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000210	-	ug/L		105	67 - 158
2,3,7,8-TCDF	0.000200	0.000215	MB	ug/L		108	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00106		ug/L		106	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00107		ug/L		107	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00106		ug/L		106	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000974	MB	ug/L		97	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102	MB	ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00124	MB	ug/L		124	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00101		ug/L		101	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000995	MB	ug/L		100	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00104	MB	ug/L		104	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00101		ug/L		101	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000963	MB	ug/L		96	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000963	MB	ug/L		96	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000965	MB	ug/L		97	78 - 138
OCDD	0.00200	0.00191	MB	ug/L		95	78 ₋ 144
OCDF	0.00200	0.00217	MB	ug/L		108	63 - 170

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	79		20 - 175
13C-2,3,7,8-TCDF	81		22 - 152
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202

TestAmerica Irvine

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TestAmerica Job ID: 440-226838-3

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Surrogate

37CI4-2,3,7,8-TCDD

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

%Recovery Qualifier

109

Lab Sample ID: LCS 320-264993/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA Prep Batch: 264993 Analysis Batch: 266136** . . . . . . . .

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	90		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	94		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	85		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	98		20 - 186
13C-OCDD	72		13 - 199
	LCS	LCS	

Lab Sample ID: LCSD 320-264993/3-A **Client Sample ID: Lab Control Sample Dup** Prep Type: Total/NA **Matrix: Water** Analysis Batch: 266126 Drop Batch: 264002

Limits

31 - 191

Analysis Batch: 266136							Prep Ba	rep Batch: 26			
	Spike	LCSD	LCSD				%Rec.		RPD		
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit		
2,3,7,8-TCDD	0.000200	0.000206	-	ug/L		103	67 - 158	2	50		
2,3,7,8-TCDF	0.000200	0.000211	MB	ug/L		106	75 - 158	2	50		
1,2,3,7,8-PeCDD	0.00100	0.00104		ug/L		104	70 - 142	2	50		
1,2,3,7,8-PeCDF	0.00100	0.00103		ug/L		103	80 - 134	4	50		
2,3,4,7,8-PeCDF	0.00100	0.00102		ug/L		102	68 - 160	4	50		
1,2,3,4,7,8-HxCDD	0.00100	0.000968	MB	ug/L		97	70 - 164	1	50		
1,2,3,6,7,8-HxCDD	0.00100	0.00100	MB	ug/L		100	76 - 134	2	50		
1,2,3,7,8,9-HxCDD	0.00100	0.00106	MB	ug/L		106	64 - 162	16	50		
1,2,3,4,7,8-HxCDF	0.00100	0.000988		ug/L		99	72 - 134	2	50		
1,2,3,6,7,8-HxCDF	0.00100	0.000987	MB	ug/L		99	84 - 130	1	50		
1,2,3,7,8,9-HxCDF	0.00100	0.00102	MB	ug/L		102	78 - 130	2	50		
2,3,4,6,7,8-HxCDF	0.00100	0.000995		ug/L		99	70 - 156	1	50		
1,2,3,4,6,7,8-HpCDD	0.00100	0.000950	MB	ug/L		95	70 - 140	1	50		
1,2,3,4,6,7,8-HpCDF	0.00100	0.000973	MB	ug/L		97	82 - 122	1	50		
1,2,3,4,7,8,9-HpCDF	0.00100	0.000940	MB	ug/L		94	78 - 138	3	50		
OCDD	0.00200	0.00193	MB	ug/L		97	78 - 144	1	50		
OCDF	0.00200	0.00217	MB	ug/L		108	63 - 170	0	50		

OCDF			0.00200	0.00217	MB	ug/L	108	63 - 170	Ü	50
	LCSD	LCSD								
Isotope Dilution	%Recovery	Qualifier	Limits							
13C-2,3,7,8-TCDD	82		20 - 175							
13C-2,3,7,8-TCDF	82		22 - 152							
13C-1,2,3,7,8-PeCDD	71		21 - 227							
13C-1,2,3,7,8-PeCDF	74		21 - 192							
13C-2,3,4,7,8-PeCDF	68		13 - 328							
13C-1,2,3,4,7,8-HxCDD	77		21 - 193							
13C-1,2,3,6,7,8-HxCDD	76		25 - 163							
13C-1,2,3,4,7,8-HxCDF	73		19 - 202							
13C-1,2,3,6,7,8-HxCDF	73		21 - 159							
13C-1,2,3,7,8,9-HxCDF	88		17 - 205							
13C-2,3,4,6,7,8-HxCDF	79		22 - 176							
13C-1,2,3,4,6,7,8-HpCDD	91		26 - 166							
13C-1,2,3,4,6,7,8-HpCDF	87		21 - 158							

TestAmerica Irvine

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## **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

## **Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA Prep Batch: 264993** 

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-264993/3-A

**Matrix: Water** 

Analysis Batch: 266136			
-	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,4,7,8,9-HpCDF	94		20 - 186
13C-OCDD	63		13 - 199
	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
37CI4-2,3,7,8-TCDD	110		31 - 191

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

## **Specialty Organics**

#### **Prep Batch: 264993**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	1613B	
440-226838-1 - RA	Outfall002_20181207_Comp	Total/NA	Water	1613B	
MB 320-264993/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-264993/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-264993/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

#### **Analysis Batch: 266136**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-264993/1-A	Method Blank	Total/NA	Water	1613B	264993
LCS 320-264993/2-A	Lab Control Sample	Total/NA	Water	1613B	264993
LCSD 320-264993/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	264993

#### **Analysis Batch: 266436**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1	Outfall002_20181207_Comp	Total/NA	Water	1613B	264993

#### **Analysis Batch: 267413**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226838-1 - RA	Outfall002_20181207_Comp	Total/NA	Water	1613B	264993

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## **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

**Qualifier Description** 

**Practical Quantitation Limit** 

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

**Quality Control** 

TestAmerica Job ID: 440-226838-3

#### **Qualifiers**

## **Dioxin**Qualifier

J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The
	measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

## Glossary

PQL

QC

RER

RL RPD

TEF

**TEQ** 

bbreviation	These commonly used abbreviations may or may not be present in this report.
	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
FL	Contains Free Liquid
NF	Contains No Free Liquid
ER	Duplicate Error Ratio (normalized absolute difference)
il Fac	Dilution Factor
L	Detection Limit (DoD/DOE)
L, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
LC	Decision Level Concentration (Radiochemistry)
DL	Estimated Detection Limit (Dioxin)
OD	Limit of Detection (DoD/DOE)
OQ	Limit of Quantitation (DoD/DOE)
1DA	Minimum Detectable Activity (Radiochemistry)
1DC	Minimum Detectable Concentration (Radiochemistry)
1DL	Method Detection Limit
1L	Minimum Level (Dioxin)
IC	Not Calculated
ID	Not Detected at the reporting limit (or MDL or EDL if shown)

TestAmerica Irvine

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## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226838-3

Project/Site: Quarterly Outfall 002 Comp

#### **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

### **Laboratory: TestAmerica Sacramento**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	12-31-19
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19



40-226838 Chain of Custody

Client Nam	e/Address					Project.			R	R	R	R	R	R	R	R	R	R			ANAI	YSIS R	EQUIRED
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Irvine CA 9	2614									l 🙊		1 53	15	E	1		ļ	5,0	3				
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Cell 949-33	33-9055									TCDD (and all congeners) (E1613B)	BOD5 (20 degrees C) (E405.1 (SM5210B BODCalc))	Surfactants (MBAS) (SM5540C/E425.1)	Nitrate-N, NO3+NO2-	Turbidity, TDS (SM2540C/E180				2,4,6 TCP, 2,4 Dinitrotoluene, ethylhexyl)phthalate, NDMA, F	s. Mercuny	in			Comments
TestAmerica s s	ervices under this CoC shall be performed in accordar	nce with the T&Cs within Blan	nket	Project	Mana	ger: Katheri	ne Mille	er	Recoverable Metals 77) Zn 18) Cu, Pb, Cd, Se	ě	lije (	Š	重	4	<u> </u>			夏豆	Metals.	Metals	1 1		
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Sample		1	Sample		# of	Preservative	Bottle	MS/MSD	200	l ë	5 5	헗	8 품	ğ	E	Ē	8	E e	<u>~</u>	48	]		
Description	Sample I D	Sampling Date/Time	Matrix	Container Type	Cont	11030:44046	#	MONINO	Total Rec (E200 7) (E200 8)	5	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Ę	Cl., SO4, Ntrate-N, Perchlorate (E300)	5	TSS (160 2 (SM2540D))	Ammonia-N (350 2)	alpha-BHC (E608)	4 5	Total	Total Recoverable (E200 7) Fe, Mn			
	<u> </u>		WM	500 mL Poly	1	HNO ₃	90	No	×	İ	T			1					<u> </u>	x			Outfail 001 analyze for Fe and Mn Outfails 002 and 011 analyze for
					<u> </u>		<u> </u>	<u> </u>	<del> </del>	<u> </u>	╃—			ļ	ļ			<u></u>					Fe only
ָסֶ		-	WM	1 L Glass Amber	2	None None	110	No No	ļ	X	<del>  x</del>	<del> </del>	┼	<del> </del>	<u> </u>	<del> </del>	<del> </del>		<del> </del>				· · · · · · · · · · · · · · · · · · ·
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6			WM	500 mL Poly	2	None	130	No					X			L							NO2
ef.	Outfall002_20181207_Comp	12/7/2018	WM	500 mL Poly	1	None	150	No						х									48 hours Holding Time for Tubidity
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TestAmenca's	services under this CoC shall be performed in accordance	with the T&Cs within Blanket S	BEVICE	Projec	t Mana	ger: Katheri	ne Mill	er	\$ \$	Ś	6898	80	囊	Pollutants-Pest	. ₹ ĕ	soived Metais Hardness as (				1
Agreement# 20 TestAmenca Lo	15-18-TestAmerica by and between Haley & Aldrich, Inc., shorstones inc.	to subsidiaries and aminore, ar	יסר	520.26	39.860	8, 520.904.69	944 (ce	ell)	ام الح	Š	8 28 2	5	ž	皇子	eg 2	ž š			1	
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10	oni			978.23	34.503	3, 818.599 07	702 (ce	ell)	Total Dissolved Metals: (E200.7). Zn (E200 8) Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E /	Gross Alpha(E900 0), Gross B4 (H-2), (E906 0), Sr-90 (E905 0), Radium 226 (E903 0 or E903 1 (E904 0), Uranium (E908 0), K- (E901 0 or E901.1)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Dissolved Metals Mercury (E2451)	Priority Pollutants-Pe	fotal Recoverable Metals: (E200 7): Hardness as CaCO3	Dissolved 7) Hard				
Sample			Sample		#of	Preservative	Bottle	MSMSD	# 88	2	88898	5 ₹	1 7	<b>E</b>	<u> </u>	Total Diss (E200.7)			-	
Description	Sample I D	Sampling Date/Time	Matrix	Container Type	Cont	Plezervavve	#	MOMICE	を四回	õ	2 + 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1	20	₽	<u> </u>	500	5 ⊞			_	
	7	E - 0					T									×				Filter and preserve w/in 24hrs of receipt at lab at OFGG1,002,011, or
ļ	O ush (1602_2018;207.CM	12-7-18	WM	1 L Poly	1 ;	None	190	No.	1					1		l ^				018
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₩			WM	1L Poly	1	None	200	No.	×				l		1					018
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<del>R</del>			WM	1 L Glass	2	None	250	No			1	١ '	1	l x	)	)				dieldon,PCBs,toxaphene at
Ľ	Outfail002_20181207_Comp_F	12/1/2018		Amber	4	NOTE	250	"			1				1					OF001,002,011, or 018.
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<u> </u>		,,		borosiikate		None	220		1		1		x	1	1	1	1	1	1	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury
N Duffall 002			WM	vrais	1	None	320	No.					^		l				-	Prep using clean procedures.
1			148.	500 1 5 1	1	NaOH	220	No		×	<del> </del>	<del> </del>	-	<del> </del>		<b></b>	1		_	
			WM	500 mL Poly		None	225	No	<del>                                     </del>	<u> </u>	<del> </del>	<del>                                     </del>	<del>                                     </del>	<del> </del>			1		_	Unfiltered and unpreserved analysis
Ì			VVIM	2.5 Gai Cube	1	Ivone	1223	110	i		x		]						- 1	Separate RAD onto another workorder Analyze duplicate, not
1	OutfallD02_20181207_Comp	12/7/2018	WM	1 L Glass Amber	1	None	230	No						[						MS/MSD.
		11005					<del> </del>	<del>                                     </del>			<del> </del>	×	-	<del> </del>		<del></del>			1	Only test if first or second rain
			WM	1 Gal Cube	25	None	235	No			<u> </u>			<b>↓</b>	<u> </u>				$+\!\!-$	events of the year
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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-226838-3

Login Number: 226838 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, 11m		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-226838-3

List Source: TestAmerica Sacramento
List Number: 2
List Creation: 12/11/18 05:45 PM

Creator: Her, David A

Question	Answer	Comment
******		Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.0c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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## **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

TestAmerica Job ID: 440-226838-3

### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		TCDD	TCDF	PeCDD	PeCDF	PeCF	HxCDD	HxDD	HxCDF
Lab Sample ID	Client Sample ID	(25-164)	(24-169)	(25-181)	(24-185)	(21-178)	(32-141)	(28-130)	(26-152)
440-226838-1	Outfall002_20181207_Comp	66	70	65	63	58	56	61	58
440-226838-1 - RA	Outfall002_20181207_Comp		69						
MB 320-264993/1-A	Method Blank	77	76	65	67	63	74	74	70
		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxDF	HxCF	13CHxCF	HpCDD	HpCDF	HpCDF2	OCDD	
Lab Sample ID	Client Sample ID	(26-123)	(29-147)	(28-136)	(23-140)	(28-143)	(26-138)	(17-157)	
440-226838-1	Outfall002_20181207_Comp	59	71	65	69	63	71	47	
440-226838-1 - RA	Outfall002_20181207_Comp								
MB 320-264993/1-A	Method Blank	70	80	75	84	83	85	53	

#### **Surrogate Legend**

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDD = 13C-1,2,3,6,7,8-HxCDD

HxCDF = 13C-1,2,3,4,7,8-HxCDF

HxDF = 13C-1,2,3,6,7,8-HxCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		TCDD	TCDF	PeCDD	PeCDF	PeCF	HxCDD	HxDD	HxCDF
Lab Sample ID	Client Sample ID	(20-175)	(22-152)	(21-227)	(21-192)	(13-328)	(21-193)	(25-163)	(19-202)
LCS 320-264993/2-A	Lab Control Sample	79	81	70	72	60	67	67	64
LCSD 320-264993/3-A	Lab Control Sample Dup	82	82	71	74	68	77	76	73
		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxDF	HxCF	13CHxCF	HpCDD	HpCDF	HpCDF2	OCDD	
Lab Sample ID	Client Sample ID	(21-159)	(17-205)	(22-176)	(26-166)	(21-158)	(20-186)	(13-199)	
LCS 320-264993/2-A	Lab Control Sample	69	90	78	94	85	98	72	-
LCSD 320-264993/3-A	Lab Control Sample Dup	73	88	79	91	87	94	63	

#### **Surrogate Legend**

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDD = 13C-1,2,3,6,7,8-HxCDD

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## **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

HxCDF = 13C-1,2,3,4,7,8-HxCDF HxDF = 13C-1,2,3,6,7,8-HxCDF HxCF = 13C-1,2,3,7,8,9-HxCDF 13CHxCF = 13C-2,3,4,6,7,8-HxCDF HpCDD = 13C-1,2,3,4,6,7,8-HpCDD HpCDF = 13C-1,2,3,4,6,7,8-HpCDF HpCDF = 13C-1,2,3,4,7,8,9-HpCDF OCDD = 13C-OCDD TestAmerica Job ID: 440-226838-3

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#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226551-1

#### **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

9 January 2019





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### **TABLES**

- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



### INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226551-1

**Project Manager:** Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 2

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20181206 _Grab	440-226551-1	N/A	Water	12/06/2018 9:15 AM	E1664, E624, SM9221F
TB_20181206	440-226551-3	N/A	Water	12/06/2018 9:15 AM	E624



### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226551-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- Both the sample and the trip blank vials contained significant headspace (bubble >6 mm). Nondetect sample results were qualified as estimated (UJ) and detects as estimated (J).
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.
- A correction to the COC was initialed but not dated.



### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



### **TABLE 3 - REASON CODE REFERENCE**

Reason	Passon							
Code	Organic	Inorganic						
Н	Holding time was exceeded.	Holding time was exceeded.						
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.						
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.						
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.						
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.						
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.						
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.						
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.						
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.						
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.						
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.						
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.						
А	Not applicable.	Serial dilution %D was outside control limits.						
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.						
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.						



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

### K. Zilis of MEC^x reviewed the SDG on January 11, 2019

The sample and trip blank listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2), EPA Method 624, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

### **III.1. HOLDING TIMES**

Analytical holding times were met. The preserved water sample and trip blank were analyzed within 14 days of collection.

### III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample and trip blank were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were  $\geq$ 0.05 for all applicable target compounds. The initial calibration %RSDs were  $\leq$ 35%, or  $r^2$  values  $\geq$ 0.990. The second source ICV and all applicable CCV recoveries were within the method control limits.

### **III.3. QUALITY CONTROL SAMPLES**

### III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank above the reporting limit. Chloromethane was reported below the reporting limit but above the MDL, however, this compound was not detected in the samples.

### III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

### III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

### 111.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC^x evaluated method accuracy based on LCS results.

### **III.4. FIELD QC SAMPLES**

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

### III.4.1. TRIP BLANKS

Sample TB_20181206 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.



### 11.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

### III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

### III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ±30 seconds for retention times and -50%/+100% for internal standard areas.

### **III.6. COMPOUND IDENTIFICATION**

Compound identification was verified. The laboratory analyzed for 36 target compounds by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

### III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

### **III.8. TENTATIVELY IDENTIFIED COMPOUNDS**

The laboratory did not report TICs for this SDG.

### III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

### IV. VARIOUS METHODS — GENERAL CHEMISTRY

M. Hilchey of MEC^X reviewed the SDG on January 9, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 1664A, Standard Methods for the Examination of Water and Wastewater 9221F and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

### **IV.1. HOLDING TIMES**

The analytical holding times as listed below, were met with the exception of E. coli.

- 28 days for HEM (oil and grease)
- 8 hours per QAPP for *E. coli*

*E. coli* was analyzed within 90 minutes of receipt at the laboratory and within the 24 hour holding time for the method. The *E. coli* result was qualified by the reviewer as a conservative measure.



### **IV.2.MS TUNING AND CALIBRATION**

Analytical balance calibration logs were not provided by the laboratory. The HEM batch notes stated that the analytical balance was checked with acceptable results before and after each first and second weighing. Biological controls were acceptable for *E. coli* analysis.

### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. **METHOD BLANKS**

The HEM method blank was nondetect. The negative control sample was acceptable for the *E. coli* analysis.

### IV.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries and RPD were within the QAPP control limits for HEM. The presumptive test was analyzed with the positive detects for the target bacteria.

### IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

### IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

### **IV.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample result reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

### IV.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

### IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

### IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402265511

Analysis Method: E1664

Sample Name C	Outfall008_20181206	_Grab	Ma	atrix Type:	W I	Result Typ	e: TRG		
Lab Sample Name:	440-226551-1	Sample Date/Time	: 12/0	06/2018	09:15		Validati	on Level: 8	
Analyte	CAS N	· -	esult Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
HEM (Oil & Grease)	НЕМО	ILGREASE		1.5	5.2	mg/L	U	U	

Wednesday, January 16, 2019 Page 1 of 4

# Analysis Method: E624

Sample Name Out	fall008_20181206 _	Grab		Matrix Type:	W F	Result Typ	e: TRG		
Lab Sample Name:	440-226551-1	Sample Date/Ti	me:	12/06/2018	09:15		Validati	on Level: 8	
Analyte	CAS No	)	Resu Val		LOQ	Result Units	Lab Qualifier		Validation Reason Code
1,1,1-Trichloroethane	71-55-6			0.25	0.50	ug/L	U	UJ	*П
1,1,2,2-Tetrachloroethane	79-34-5			0.25	0.50	ug/L	U	UJ	*П
1,1,2-Trichloroethane	79-00-5			0.25	0.50	ug/L	U	UJ	*П
1,1-Dichloroethane	75-34-3			0.25	0.50	ug/L	U	UJ	*П
1,1-Dichloroethene	75-35-4			0.25	0.50	ug/L	U	UJ	*П
1,2-Dichlorobenzene	95-50-1			0.25	0.50	ug/L	U	UJ	*II
1,2-Dichloroethane	107-06-2			0.25	0.50	ug/L	U	UJ	*II
1,2-Dichloropropane	78-87-5			0.25	0.50	ug/L	U	UJ	*II
1,3-Dichlorobenzene	541-73-1			0.25	0.50	ug/L	U	UJ	*11
1,4-Dichlorobenzene	106-46-7			0.25	0.50	ug/L	U	UJ	*11
2-Chloroethyl vinyl ether	110-75-8			1.0	2.0	ug/L	U	UJ	*П
Acrolein	107-02-8			2.5	5.0	ug/L	U	UJ	*П
Acrylonitrile	107-13-1			1.0	2.0	ug/L	U	UJ	*П
Benzene	71-43-2			0.25	0.50	ug/L	U	UJ	*Ⅱ
Bromodichloromethane	75-27-4			0.25	0.50	ug/L	U	UJ	*П
Bromoform	75-25-2			0.40	1.0	ug/L	U	UJ	*Ⅱ
Bromomethane	74-83-9			0.25	0.50	ug/L	U	UJ	*П
Carbon tetrachloride	56-23-5			0.25	0.50	ug/L	U	UJ	*II
Chlorobenzene	108-90-7			0.25	0.50	ug/L	U	UJ	*II
Chloroethane	75-00-3			0.40	1.0	ug/L	U	UJ	*П
Chloroform	67-66-3			0.25	0.50	ug/L	U	UJ	*П
Chloromethane	74-87-3			0.25	0.50	ug/L	U	UJ	*II
cis-1,2-Dichloroethene	156-59-2			0.25	0.50	ug/L	U	UJ	*II
cis-1,3-Dichloropropene	10061-0	1-5		0.25	0.50	ug/L	U	UJ	*II
Dibromochloromethane	124-48-1			0.25	0.50	ug/L	U	UJ	*11
Ethylbenzene	100-41-4			0.25	0.50	ug/L	U	UJ	*11
Methylene Chloride	75-09-2			0.88	2.0	ug/L	U	UJ	*11
Naphthalene	91-20-3			0.40	1.0	ug/L	U	UJ	*11
Tetrachloroethene	127-18-4			0.25	0.50	ug/L	U	UJ	*11
Γoluene	108-88-3		0.27	0.25	0.50	ug/L	J,DX	J	DNQ, *II
rans-1,2-Dichloroethene	156-60-5			0.25	0.50	ug/L	U	UJ	*П
rans-1,3-Dichloropropene	10061-02	2-6		0.25	0.50	ug/L	U	UJ	*П
Γrichloroethene	79-01-6			0.25	0.50	ug/L	U	UJ	*П
Trichlorofluoromethane	75-69-4			0.25	0.50	ug/L	U	UJ	*П
Vinyl chloride	75-01-4			0.25	0.50	ug/L	U	UJ	*П
Xylenes, Total	1330-20-	7		0.50	1.0	ug/L	U	UJ	*Π

Wednesday, January 16, 2019 Page 2 of 4

# Analysis Method: E624

Sample Name TB	_20181206	Matrix Type:	W F	Result Typ	e: TRG		
Lab Sample Name:	440-226551-3 <b>Sample D</b>	<b>Date/Time:</b> 12/06/2018	09:15		Validati	on Level: 8	
Analyte	CAS No	Result DL Value	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
1,1,1-Trichloroethane	71-55-6	0.25	0.50	ug/L	U	UJ	*II
1,1,2,2-Tetrachloroethane	79-34-5	0.25	0.50	ug/L	U	UJ	*II
1,1,2-Trichloroethane	79-00-5	0.25	0.50	ug/L	U	UJ	*II
1,1-Dichloroethane	75-34-3	0.25	0.50	ug/L	U	UJ	*II
1,1-Dichloroethene	75-35-4	0.25	0.50	ug/L	U	UJ	*II
1,2-Dichlorobenzene	95-50-1	0.25	0.50	ug/L	U	UJ	*II
1,2-Dichloroethane	107-06-2	0.25	0.50	ug/L	U	UJ	*II
1,2-Dichloropropane	78-87-5	0.25	0.50	ug/L	U	UJ	*II
1,3-Dichlorobenzene	541-73-1	0.25	0.50	ug/L	U	UJ	*II
1,4-Dichlorobenzene	106-46-7	0.25	0.50	ug/L	U	UJ	*II
2-Chloroethyl vinyl ether	110-75-8	1.0	2.0	ug/L	U	UJ	*II
Acrolein	107-02-8	2.5	5.0	ug/L	U	UJ	*II
Acrylonitrile	107-13-1	1.0	2.0	ug/L	U	UJ	*II
Benzene	71-43-2	0.25	0.50	ug/L	U	UJ	*II
Bromodichloromethane	75-27-4	0.25	0.50	ug/L	U	UJ	*II
Bromoform	75-25-2	0.40	1.0	ug/L	U	UJ	*II
Bromomethane	74-83-9	0.25	0.50	ug/L	U	UJ	*II
Carbon tetrachloride	56-23-5	0.25	0.50	ug/L	U	UJ	*II
Chlorobenzene	108-90-7	0.25	0.50	ug/L	U	UJ	*II
Chloroethane	75-00-3	0.40	1.0	ug/L	U	UJ	*II
Chloroform	67-66-3	0.25	0.50	ug/L	U	UJ	*II
Chloromethane	74-87-3	0.25	0.50	ug/L	U	UJ	*II
cis-1,2-Dichloroethene	156-59-2	0.25	0.50	ug/L	U	UJ	*II
cis-1,3-Dichloropropene	10061-01-5	0.25	0.50	ug/L	U	UJ	*II
Dibromochloromethane	124-48-1	0.25	0.50	ug/L	U	UJ	*II
Ethylbenzene	100-41-4	0.25	0.50	ug/L	U	UJ	*II
Methylene Chloride	75-09-2	0.88	2.0	ug/L	U	UJ	*II
Naphthalene	91-20-3	0.40	1.0	ug/L	U	UJ	*II
Tetrachloroethene	127-18-4	0.25	0.50	ug/L	U	UJ	*II
Toluene	108-88-3	0.25	0.50	ug/L	U	UJ	*II
trans-1,2-Dichloroethene	156-60-5	0.25	0.50	ug/L	U	UJ	*II
trans-1,3-Dichloropropene	10061-02-6	0.25	0.50	ug/L	U	UJ	*II
Trichloroethene	79-01-6	0.25	0.50	ug/L	U	UJ	*П
Trichlorofluoromethane	75-69-4	0.25	0.50	ug/L	U	UJ	*II
Vinyl chloride	75-01-4	0.25	0.50	ug/L	U	UJ	*II

Wednesday, January 16, 2019 Page 3 of 4

# *Analysis Method:* SM9221F

Sample Name	Outfall008_20181206	Grab	Matrix T	ype: W	R	esult Type:	TRG		
Lab Sample Name:	: 440-226551-1	Sample Date/Time:	12/06/2018	09	:15		Validatio	on Level: 8	
Analyte	CAS N	-	sult DL alue	L(	Q	Result Units			Validation Reason Code
Escherichia coli	ECOLI	850	0 1.8	1.8	3	mpn/100	BUBV	J	Н

Wednesday, January 16, 2019 Page 4 of 4



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226551-1

Client Project/Site: Annual Outfall 008 Grab

### For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Ushi Patel

Authorized for release by: 12/24/2018 3:46:00 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ·······

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Usli fatel

Urvashi Patel Manager of Project Management 12/24/2018 3:46:00 PM

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Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Grab TestAmerica Job ID: 440-226551-1

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226551-1	Outfall008_20181206 _Grab	Water	12/06/18 09:15	12/06/18 18:00
440-226551-3	TB_20181206	Water	12/06/18 09:15	12/06/18 18:00

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

Job ID: 440-226551-1

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226551-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/6/2018 6:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

### **Receipt Exceptions**

The following sample(s) was received with headspace in the sample container. This sample container was received with headspace. TB_20181206 (440-226551-3). Received two voa vial HCL TB with headspace and one voa vial unpreserved TB with headspace.

### GC/MS VOA

Method(s) 624: The following volatile sample was received and analyzed with significant headspace in the sample container(s): TB_20181206 (440-226551-3). Significant headspace is defined as a bubble greater than 6 mm in diameter. All VOA vials had headspace.

Method(s) 624: The method blank for analytical batch 440-516443 contained Chloroform above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Biology**

Method(s) SM 9221F: The following sample was received outside of holding time: Outfall008_20181206 _Grab (440-226551-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Organic Prep**

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-518857 and analytical batch 440-518896. The Laboratory Control Sample (LCS) was performed in duplicate to provide precision data for this batch

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client: Haley & Aldrich, Inc.

4-Bromofluorobenzene (Surr)

Project/Site: Annual Outfall 008 Grab

Client Sample ID: Outfall008 20181206 Grab Lab Sample ID: 440-226551-1

Date Collected: 12/06/18 09:15 Date Received: 12/06/18 18:00

**Matrix: Water** 

Method: 624 - Volatile Orga Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/12/18 09:16	1
2-Chloroethyl vinyl ether	ND		2.0		ug/L			12/07/18 11:11	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			12/12/18 09:16	1
Acrolein	ND		5.0		ug/L			12/07/18 11:11	1
1,1,2-Trichloroethane	ND		0.50		ug/L			12/12/18 09:16	1
Acrylonitrile	ND		2.0		ug/L			12/07/18 11:11	1
1,1-Dichloroethane	ND		0.50		ug/L			12/12/18 09:16	1
1,1-Dichloroethene	ND		0.50		ug/L			12/12/18 09:16	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/12/18 09:16	1
1,2-Dichloroethane	ND		0.50		ug/L			12/12/18 09:16	1
1,2-Dichloropropane	ND		0.50		ug/L			12/12/18 09:16	1
1,3-Dichlorobenzene	ND		0.50		ug/L			12/12/18 09:16	1
1,4-Dichlorobenzene	ND		0.50		ug/L			12/12/18 09:16	1
Benzene	ND		0.50		ug/L			12/12/18 09:16	1
Bromoform	ND		1.0		ug/L			12/12/18 09:16	1
Bromomethane	ND		0.50		ug/L			12/12/18 09:16	1
Carbon tetrachloride	ND		0.50		ug/L			12/12/18 09:16	1
Chlorobenzene	ND		0.50		ug/L			12/12/18 09:16	1
Dibromochloromethane	ND		0.50		ug/L			12/12/18 09:16	1
Chloroethane	ND		1.0		ug/L			12/12/18 09:16	1
Chloroform	ND		0.50		ug/L			12/12/18 09:16	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			12/12/18 09:16	1
Bromodichloromethane	ND		0.50		ug/L			12/12/18 09:16	1
Ethylbenzene	ND		0.50		ug/L			12/12/18 09:16	1
Methylene Chloride	ND		2.0		ug/L			12/12/18 09:16	1
Tetrachloroethene	ND		0.50		ug/L			12/12/18 09:16	1
Toluene	0.27	J,DX	0.50		ug/L			12/12/18 09:16	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			12/12/18 09:16	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			12/12/18 09:16	1
Trichlorofluoromethane	ND		0.50		ug/L			12/12/18 09:16	1
Vinyl chloride	ND		0.50		ug/L			12/12/18 09:16	1
Trichloroethene	ND		0.50		ug/L			12/12/18 09:16	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			12/12/18 09:16	1
Naphthalene	ND		1.0		ug/L			12/12/18 09:16	1
Xylenes, Total	ND		1.0		ug/L			12/12/18 09:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 128			-		12/07/18 11:11	1
Dibromofluoromethane (Surr)	88		76 - 132					12/07/18 11:11	1
4-Bromofluorobenzene (Surr)	94		80 - 120					12/07/18 11:11	1
4-Bromofluorobenzene (Surr)	96		80 - 120					12/12/18 09:16	1
Dibromofluoromethane (Surr)	91		76 - 132					12/12/18 09:16	1
Toluene-d8 (Surr)	98		80 - 128					12/12/18 09:16	1
Method: 624 - Volatile Orga									
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		0.50	0.25	ug/L			12/14/18 01:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
15 %	<del></del>					=		10/11/12 21 22	

TestAmerica Irvine

12/14/18 01:30

80 - 120

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

Lab Sample ID: 440-226551-1

**Matrix: Water** 

Client Sample ID: Outfall008 20181206 Grab Date Collected: 12/06/18 09:15

Date Received: 12/06/18 18:00

Method: 624 - Volatile Organic Compounds (GC/MS) - RA (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	108		76 - 132	<del></del> <del>1</del>	12/14/18 01:30	1
Toluene-d8 (Surr)	106		80 - 128	1	12/14/18 01:30	1

**General Chemistry** 

Analyte Result Qualifier MDL Unit Prepared Analyzed Dil Fac HEM (Oil & Grease) ND 5.2 1.5 mg/L 12/22/18 04:59 12/22/18 09:49

Method: SM 9221F - E.Coli (Mu	ultiple-Tube	<b>Fermenta</b>	ation; EC-MUG)						
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	8500	BU BV	1.8	1.8	MPN/100mL			12/06/18 19:27	1

Client Sample ID: TB_20181206 Lab Sample ID: 440-226551-3

Date Collected: 12/06/18 09:15 **Matrix: Water** 

Date Received: 12/06/18 18:00

Analyte	Result Qualifier	RL	MDL Uni	it D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND ND	0.50	0.25 ug/l	L		12/11/18 16:54	1
2-Chloroethyl vinyl ether	ND	2.0	1.0 ug/l	Ľ		12/07/18 12:49	1
1,1,2,2-Tetrachloroethane	ND	0.50	0.25 ug/l	Ľ		12/11/18 16:54	1
Acrolein	ND	5.0	2.5 ug/l	Ľ		12/07/18 12:49	1
1,1,2-Trichloroethane	ND	0.50	0.25 ug/l	Ľ		12/11/18 16:54	1
Acrylonitrile	ND	2.0	1.0 ug/l	'L		12/07/18 12:49	1
1,1-Dichloroethane	ND	0.50	0.25 ug/l	Ĺ		12/11/18 16:54	1
1,1-Dichloroethene	ND	0.50	0.25 ug/l	′L		12/11/18 16:54	1
1,2-Dichlorobenzene	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
1,2-Dichloroethane	ND	0.50	0.25 ug/l	Ĺ		12/11/18 16:54	1
1,2-Dichloropropane	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
1,3-Dichlorobenzene	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
1,4-Dichlorobenzene	ND	0.50	0.25 ug/l	Ĺ		12/11/18 16:54	1
Benzene	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
Bromoform	ND	1.0	0.40 ug/l	'L		12/11/18 16:54	1
Bromomethane	ND	0.50	0.25 ug/l	Ĺ		12/11/18 16:54	1
Carbon tetrachloride	ND	0.50	0.25 ug/l			12/11/18 16:54	1
Chlorobenzene	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
Dibromochloromethane	ND	0.50	0.25 ug/l	Ĺ		12/11/18 16:54	1
Chloroethane	ND	1.0	0.40 ug/l	′L		12/11/18 16:54	1
Chloroform	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
Chloromethane	ND	0.50	0.25 ug/l			12/11/18 16:54	1
cis-1,3-Dichloropropene	ND	0.50	0.25 ug/l			12/11/18 16:54	1
Bromodichloromethane	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
Ethylbenzene	ND	0.50	0.25 ug/l	Ĺ		12/11/18 16:54	1
Methylene Chloride	ND	2.0	0.88 ug/l	'L		12/11/18 16:54	1
Tetrachloroethene	ND	0.50	0.25 ug/l	'L		12/11/18 16:54	1
Toluene	ND	0.50	0.25 ug/l			12/11/18 16:54	1
trans-1,2-Dichloroethene	ND	0.50	0.25 ug/l			12/11/18 16:54	1
trans-1,3-Dichloropropene	ND	0.50	0.25 ug/l			12/11/18 16:54	1
Trichlorofluoromethane	ND	0.50	0.25 ug/l			12/11/18 16:54	1
Vinyl chloride	ND	0.50	0.25 ug/l			12/11/18 16:54	1

TestAmerica Irvine

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

Lab Sample ID: 440-226551-3

Matrix: Water

Client Sample ID: TB_20181206 Date Collected: 12/06/18 09:15

Date Received: 12/06/18 18:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		0.50	0.25	ug/L			12/11/18 16:54	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 16:54	1
Naphthalene	ND		1.0	0.40	ug/L			12/11/18 16:54	1
Xylenes, Total	ND		1.0	0.50	ug/L			12/11/18 16:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 128					12/07/18 12:49	1
Dibromofluoromethane (Surr)	88		76 - 132					12/07/18 12:49	1
4-Bromofluorobenzene (Surr)	94		80 - 120					12/07/18 12:49	1
4-Bromofluorobenzene (Surr)	103		80 - 120					12/11/18 16:54	1
Dibromofluoromethane (Surr)	110		76 - 132					12/11/18 16:54	1
Toluene-d8 (Surr)	106		80 - 128					12/11/18 16:54	

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# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

### **Protocol References:**

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

### **Laboratory References:**

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

Client Sample ID: Outfall008 20181206 Grab Lab Sample ID: 440-226551-1

Date Collected: 12/06/18 09:15 **Matrix: Water** 

Date Received: 12/06/18 18:00

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	624	RA	1	10 mL	10 mL	516966	12/14/18 01:30	WC	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	515518	12/07/18 11:11	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	516443	12/12/18 09:16	TCN	TAL IRV
Total/NA	Prep	1664A			965 mL	1000 mL	518857	12/22/18 04:59	JC1	TAL IRV
Total/NA	Analysis	1664A		1			518896	12/22/18 09:49	JC1	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	516006		CMM	TAL IRV
							(Start)	12/06/18 19:27		
							(End)	12/09/18 15:14		

Client Sample ID: TB_20181206 Lab Sample ID: 440-226551-3

Date Collected: 12/06/18 09:15

**Matrix: Water** Date Received: 12/06/18 18:00

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	516174	12/11/18 16:54	TCN	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	515518	12/07/18 12:49	RM	TAL IRV

**Laboratory References:** 

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

### Method: 624 - Volatile Organic Compounds (GC/MS)

MR MR

Lab Sample ID: MB 440-515518/4

**Matrix: Water** 

**Analysis Batch: 515518** 

Client Sample ID: Method Blank Prep Type: Total/NA

Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND	2.0	1.0 ug/L			12/07/18 08:07	1
Acrolein	ND	5.0	2.5 ug/L			12/07/18 08:07	1
Acrylonitrile	ND	2.0	1.0 ug/L			12/07/18 08:07	1

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 12/07/18 08:07 Toluene-d8 (Surr) 98 80 - 128 95 76 - 132 12/07/18 08:07 Dibromofluoromethane (Surr) 1 4-Bromofluorobenzene (Surr) 96 80 - 120 12/07/18 08:07

Lab Sample ID: LCS 440-515518/5

**Matrix: Water** 

**Analysis Batch: 515518** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 2-Chloroethyl vinyl ether 25.0 25.8 ug/L 103 37 - 150 25.0 20.2 Acrolein ug/L 81 10 - 145 Acrylonitrile 250 224 ug/L 90 48 - 140

LCS LCS %Recovery Qualifier Limits Surrogate 80 - 128 Toluene-d8 (Surr) 96 Dibromofluoromethane (Surr) 96 76 - 132 4-Bromofluorobenzene (Surr) 95 80 - 120

Lab Sample ID: 440-226628-D-1 MS

**Matrix: Water** 

**Analysis Batch: 515518** 

**Client Sample ID: Matrix Spike Prep Type: Total/NA** 

Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Limits **Analyte** Unit D %Rec 2-Chloroethyl vinyl ether ND 25.0 39.9 LM ug/L 160 10 - 140 Acrolein ND 25.0 2.60 J,DX ug/L 10 10 - 147 250 Acrylonitrile ND 238 ug/L 95 38 - 144MS MS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 128
Dibromofluoromethane (Surr)	89		76 - 132
4-Bromofluorobenzene (Surr)	97		80 - 120

Lab Sample ID: 440-226628-D-1 MSD

**Matrix: Water** 

Analysis Batch: 515518

**Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

Analysis Daton. 515516	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2-Chloroethyl vinyl ether	ND		25.0	40.7	LM	ug/L		163	10 - 140	2	25
Acrolein	ND		25.0	2.56	J,DX	ug/L		10	10 - 147	1	40
Acrylonitrile	ND		250	257		ug/L		103	38 - 144	8	40

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# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-226628-D-1 MSD

**Matrix: Water** 

**Analysis Batch: 515518** 

Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

MSD MSD

Surrogate	%Recovery Qualifier	Limits
Toluene-d8 (Surr)	93	80 - 128
Dibromofluoromethane (Surr)	87	76 - 132
4-Bromofluorobenzene (Surr)	95	80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Matrix: Water

**Analysis Batch: 516174** 

Lab Sample ID: MB 440-516174/4

	MB N	<b>ИВ</b>							
Analyte	Result C	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Benzene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Bromoform	ND		1.0	0.40	ug/L			12/11/18 08:04	1
Bromomethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Chloroethane	ND		1.0	0.40	ug/L			12/11/18 08:04	1
Chloroform	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Chloromethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/11/18 08:04	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Toluene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Vinyl chloride	ND		0.50	0.25	-			12/11/18 08:04	1
Trichloroethene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/11/18 08:04	1
Naphthalene	ND		1.0	0.40	-			12/11/18 08:04	1
Xylenes, Total	ND		1.0	0.50	-			12/11/18 08:04	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120	12/11/18 08:0	<del>4</del> <del>1</del>
Dibromofluoromethane (Surr)	106		76 - 132	12/11/18 08:0	4 1
Toluene-d8 (Surr)	109		80 - 128	12/11/18 08:0	4 1

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40/04/0046

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-516174/5

**Matrix: Water** 

**Analysis Batch: 516174** 

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1,1-Trichloroethane	25.0	28.0		ug/L		112	70 - 130	
1,1,2,2-Tetrachloroethane	25.0	27.3		ug/L		109	63 - 130	
1,1,2-Trichloroethane	25.0	28.1		ug/L		113	70 - 130	
1,1-Dichloroethane	25.0	27.0		ug/L		108	64 - 130	
1,1-Dichloroethene	25.0	25.3		ug/L		101	70 - 130	
1,2-Dichlorobenzene	25.0	26.9		ug/L		108	70 - 130	
1,2-Dichloroethane	25.0	27.5		ug/L		110	57 - 138	
1,2-Dichloropropane	25.0	27.3		ug/L		109	67 - 130	
1,3-Dichlorobenzene	25.0	26.7		ug/L		107	70 - 130	
1,4-Dichlorobenzene	25.0	26.3		ug/L		105	70 - 130	
Benzene	25.0	26.2		ug/L		105	68 - 130	
Bromoform	25.0	30.3		ug/L		121	60 - 148	
Bromomethane	25.0	23.3		ug/L		93	64 - 139	
Carbon tetrachloride	25.0	27.5		ug/L		110	60 - 150	
Chlorobenzene	25.0	26.5		ug/L		106	70 - 130	
Dibromochloromethane	25.0	30.4		ug/L		121	69 - 145	
Chloroethane	25.0	23.7		ug/L		95	64 - 135	
Chloroform	25.0	27.6		ug/L		110	70 - 130	
Chloromethane	25.0	20.7		ug/L		83	47 - 140	
cis-1,3-Dichloropropene	25.0	31.5		ug/L		126	70 - 133	
Bromodichloromethane	25.0	28.4		ug/L		114	70 - 132	
Ethylbenzene	25.0	25.9		ug/L		104	70 - 130	
Methylene Chloride	25.0	25.3		ug/L		101	52 - 130	
Tetrachloroethene	25.0	26.9		ug/L		107	70 - 130	
Toluene	25.0	26.2		ug/L		105	70 - 130	
trans-1,2-Dichloroethene	25.0	28.0		ug/L		112	70 - 130	
trans-1,3-Dichloropropene	25.0	30.6		ug/L		122	70 - 132	
Trichlorofluoromethane	25.0	24.2		ug/L		97	60 - 150	
Vinyl chloride	25.0	20.6		ug/L		82	59 - 133	
Trichloroethene	25.0	27.0		ug/L		108	70 - 130	
cis-1,2-Dichloroethene	25.0	27.8		ug/L		111	70 - 133	
Naphthalene	25.0	27.0		ug/L		108	60 - 140	
Xylenes, Total	50.0	51.8		ug/L		104	70 - 130	

LCS LCS

Surrogate	%Recovery 0	Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Lab Sample ID: 320-45836-E-19 MS

**Matrix: Water** 

**Analysis Batch: 516174** 

Client Sample ID: Matrix Spike Prep Type: Total/NA

	Sample Sam	ple Spike	MS	MS				%Rec.	
Analyte	Result Qua	ifier Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1,1-Trichloroethane	ND	25.0	28.5		ug/L		114	70 - 130	
1,1,2,2-Tetrachloroethane	ND	25.0	27.9		ug/L		112	63 - 130	
1,1,2-Trichloroethane	ND	25.0	28.1		ug/L		112	70 - 130	
1,1-Dichloroethane	ND	25.0	27.0		ug/L		108	65 - 130	

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 320-45836-E-19 MS

**Matrix: Water** 

**Client Sample ID: Matrix Spike Prep Type: Total/NA** 

Analysis Batch: 516174									
-	Sample	Sample	Spike	MS	MS			%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D %Rec	Limits	
1,1-Dichloroethene	ND		25.0	24.6		ug/L	98	70 - 130	
1,2-Dichlorobenzene	ND		25.0	27.6		ug/L	111	70 - 130	
1,2-Dichloroethane	ND		25.0	28.0		ug/L	112	56 - 146	
1,2-Dichloropropane	5.2		25.0	33.4		ug/L	113	69 - 130	
1,3-Dichlorobenzene	ND		25.0	26.8		ug/L	107	70 - 130	
1,4-Dichlorobenzene	ND		25.0	26.9		ug/L	108	70 - 130	
Benzene	ND		25.0	26.2		ug/L	105	66 - 130	
Bromoform	ND		25.0	31.2		ug/L	125	59 - 150	
Bromomethane	ND		25.0	23.4		ug/L	93	62 - 131	
Carbon tetrachloride	ND		25.0	28.0		ug/L	112	60 - 150	
Chlorobenzene	ND		25.0	26.1		ug/L	104	70 - 130	
Dibromochloromethane	ND		25.0	31.3		ug/L	125	70 - 148	
Chloroethane	ND		25.0	23.5		ug/L	94	68 - 130	
Chloroform	ND		25.0	27.4		ug/L	110	70 - 130	
Chloromethane	ND		25.0	20.4		ug/L	82	39 - 144	
cis-1,3-Dichloropropene	ND		25.0	32.1		ug/L	128	70 - 133	
Bromodichloromethane	ND		25.0	28.5		ug/L	114	70 - 138	
Ethylbenzene	ND		25.0	25.7		ug/L	103	70 - 130	
Methylene Chloride	ND		25.0	25.1		ug/L	100	52 - 130	
Tetrachloroethene	ND		25.0	27.4		ug/L	110	70 - 137	
Toluene	ND		25.0	26.2		ug/L	105	70 - 130	
trans-1,2-Dichloroethene	ND		25.0	27.5		ug/L	110	70 - 130	

25.0

25.0

25.0

25.0

25.0

25.0

50.0

30.3

24.0

20.5

27.2

27.2

27.4

51.7

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

MS MS

ND

ND

ND

ND

ND

ND

ND

Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 100 80 - 120 Dibromofluoromethane (Surr) 105 76 - 132 80 - 128 Toluene-d8 (Surr) 103

Lab Sample ID: 320-45836-E-19 MSD

**Matrix: Water** 

**Analysis Batch: 516174** 

trans-1,3-Dichloropropene

Trichlorofluoromethane

cis-1,2-Dichloroethene

Vinyl chloride

Naphthalene

Xylenes, Total

Trichloroethene

<b>Client Sample</b>	ID: Matrix Spil	ce Duplicate
	Prop Tyr	or Total/NA

121

96

82

109

109

110

103

70 - 138 60 - 150

50 - 137

70 - 130

70 - 130

60 - 140

70 - 133

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1-Trichloroethane	ND		25.0	26.8		ug/L		107	70 - 130	6	20
1,1,2,2-Tetrachloroethane	ND		25.0	26.6		ug/L		106	63 - 130	5	30
1,1,2-Trichloroethane	ND		25.0	26.7		ug/L		107	70 - 130	5	25
1,1-Dichloroethane	ND		25.0	25.0		ug/L		100	65 - 130	8	20
1,1-Dichloroethene	ND		25.0	23.9		ug/L		96	70 - 130	3	20
1,2-Dichlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130	8	20
1,2-Dichloroethane	ND		25.0	26.4		ug/L		106	56 - 146	6	20
1,2-Dichloropropane	5.2		25.0	31.0		ug/L		103	69 - 130	7	20

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 320-45836-E-19 MSD

**Matrix: Water** 

Analysis Batch: 516174

**Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA** 

Allalysis Batch. 310174	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,3-Dichlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130	8	20
1,4-Dichlorobenzene	ND		25.0	25.1		ug/L		100	70 - 130	7	20
Benzene	ND		25.0	24.7		ug/L		99	66 - 130	6	20
Bromoform	ND		25.0	29.5		ug/L		118	59 - 150	5	25
Bromomethane	ND		25.0	22.2		ug/L		89	62 - 131	5	25
Carbon tetrachloride	ND		25.0	26.3		ug/L		105	60 - 150	6	25
Chlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	6	20
Dibromochloromethane	ND		25.0	29.2		ug/L		117	70 - 148	7	25
Chloroethane	ND		25.0	22.5		ug/L		90	68 - 130	4	25
Chloroform	ND		25.0	26.1		ug/L		105	70 - 130	5	20
Chloromethane	ND		25.0	19.5		ug/L		78	39 - 144	4	25
cis-1,3-Dichloropropene	ND		25.0	29.3		ug/L		117	70 - 133	9	20
Bromodichloromethane	ND		25.0	27.1		ug/L		108	70 - 138	5	20
Ethylbenzene	ND		25.0	24.2		ug/L		97	70 - 130	6	20
Methylene Chloride	ND		25.0	23.6		ug/L		95	52 - 130	6	20
Tetrachloroethene	ND		25.0	25.2		ug/L		101	70 - 137	8	20
Toluene	ND		25.0	24.4		ug/L		98	70 - 130	7	20
trans-1,2-Dichloroethene	ND		25.0	26.1		ug/L		105	70 - 130	5	20
trans-1,3-Dichloropropene	ND		25.0	28.7		ug/L		115	70 - 138	5	25
Trichlorofluoromethane	ND		25.0	23.1		ug/L		93	60 - 150	4	25
Vinyl chloride	ND		25.0	19.9		ug/L		80	50 - 137	3	30
Trichloroethene	ND		25.0	25.4		ug/L		101	70 - 130	7	20
cis-1,2-Dichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	6	20
Naphthalene	ND		25.0	26.0		ug/L		104	60 - 140	5	30
Xylenes, Total	ND		50.0	48.4		ug/L		97	70 - 133	7	20

MSD MSD

Surrogate	%Recovery Qual	ifier Limits
4-Bromofluorobenzene (Surr)	98	80 - 120
Dibromofluoromethane (Surr)	106	76 - 132
Toluene-d8 (Surr)	103	80 - 128

Lab Sample ID: MB 440-516443/4

**Matrix: Water** 

**Analysis Batch: 516443** 

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Benzene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Bromoform	ND		1.0	0.40	ug/L			12/12/18 08:02	1

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-516443/4

**Matrix: Water** 

**Analysis Batch: 516443** 

Client Sample ID: Method Blank Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Chloroethane	ND		1.0	0.40	ug/L			12/12/18 08:02	1
Chloroform	0.262	J,DX	0.50	0.25	ug/L			12/12/18 08:02	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/12/18 08:02	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Toluene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Trichloroethene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/12/18 08:02	1
Naphthalene	ND		1.0	0.40	ug/L			12/12/18 08:02	1
Xylenes, Total	ND		1.0	0.50	ug/L			12/12/18 08:02	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	l Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		80 - 120		12/12/18 08:02	1
Dibromofluoromethane (Surr)	93		76 - 132		12/12/18 08:02	1
Toluene-d8 (Surr)	100		80 - 128		12/12/18 08:02	1

Lab Sample ID: LCS 440-516443/5

Matrix: Water

**Analysis Batch: 516443** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1,1-Trichloroethane	25.0	24.5	-	ug/L		98	70 - 130	<u> </u>
1,1,2,2-Tetrachloroethane	25.0	26.4		ug/L		106	63 - 130	
1,1,2-Trichloroethane	25.0	24.9		ug/L		100	70 - 130	
1,1-Dichloroethane	25.0	23.1		ug/L		93	64 - 130	
1,1-Dichloroethene	25.0	25.2		ug/L		101	70 - 130	
1,2-Dichlorobenzene	25.0	25.9		ug/L		104	70 - 130	
1,2-Dichloroethane	25.0	20.2		ug/L		81	57 - 138	
1,2-Dichloropropane	25.0	24.8		ug/L		99	67 - 130	
1,3-Dichlorobenzene	25.0	24.7		ug/L		99	70 - 130	
1,4-Dichlorobenzene	25.0	24.1		ug/L		96	70 - 130	
Benzene	25.0	23.6		ug/L		94	68 - 130	
Bromoform	25.0	23.8		ug/L		95	60 - 148	
Bromomethane	25.0	22.2		ug/L		89	64 - 139	
Carbon tetrachloride	25.0	24.2		ug/L		97	60 - 150	
Chlorobenzene	25.0	23.6		ug/L		94	70 - 130	
Dibromochloromethane	25.0	23.6		ug/L		94	69 - 145	
Chloroethane	25.0	23.5		ug/L		94	64 - 135	

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

## **Client Sample ID: Lab Control Sample Prep Type: Total/NA**

Lab Sample ID: LCS 440-516443/5

**Matrix: Water** 

**Analysis Batch: 516443** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloroform	25.0	22.8		ug/L		91	70 - 130	
cis-1,3-Dichloropropene	25.0	25.3		ug/L		101	70 - 133	
Bromodichloromethane	25.0	24.0		ug/L		96	70 - 132	
Ethylbenzene	25.0	24.2		ug/L		97	70 - 130	
Methylene Chloride	25.0	21.6		ug/L		86	52 - 130	
Tetrachloroethene	25.0	24.2		ug/L		97	70 - 130	
Toluene	25.0	23.0		ug/L		92	70 - 130	
trans-1,2-Dichloroethene	25.0	24.4		ug/L		98	70 - 130	
trans-1,3-Dichloropropene	25.0	23.6		ug/L		95	70 - 132	
Trichlorofluoromethane	25.0	22.4		ug/L		89	60 - 150	
Vinyl chloride	25.0	21.6		ug/L		86	59 - 133	
Trichloroethene	25.0	24.3		ug/L		97	70 - 130	
cis-1,2-Dichloroethene	25.0	23.9		ug/L		96	70 - 133	
Naphthalene	25.0	28.0		ug/L		112	60 - 140	
Xylenes, Total	50.0	51.4		ug/L		103	70 - 130	

LCS LCS

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	93	80 - 120
Dibromofluoromethane (Surr)	92	76 - 132
Toluene-d8 (Surr)	94	80 - 128

Lab Sample ID: 440-226883-A-1 MS

**Matrix: Water** 

Analysis Batch: 516443

		Client Sample ID: Matrix Spike Prep Type: Total/NA
Spike	MS MS	%Rec.

Analysis Batch: 516443										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1,1-Trichloroethane	ND		25.0	24.0		ug/L		96	70 - 130	
1,1,2,2-Tetrachloroethane	ND		25.0	23.7		ug/L		95	63 - 130	
1,1,2-Trichloroethane	ND		25.0	23.3		ug/L		93	70 - 130	
1,1-Dichloroethane	ND		25.0	22.0		ug/L		88	65 - 130	
1,1-Dichloroethene	ND		25.0	24.0		ug/L		96	70 - 130	
1,2-Dichlorobenzene	ND		25.0	24.3		ug/L		97	70 - 130	
1,2-Dichloroethane	ND		25.0	19.1		ug/L		77	56 - 146	
1,2-Dichloropropane	ND		25.0	23.8		ug/L		95	69 - 130	
1,3-Dichlorobenzene	ND		25.0	23.7		ug/L		95	70 - 130	
1,4-Dichlorobenzene	ND		25.0	23.1		ug/L		92	70 - 130	
Benzene	ND		25.0	22.5		ug/L		90	66 - 130	
Bromoform	ND		25.0	21.6		ug/L		86	59 - 150	
Bromomethane	ND		25.0	20.5		ug/L		82	62 - 131	
Carbon tetrachloride	ND		25.0	23.8		ug/L		95	60 - 150	
Chlorobenzene	ND		25.0	22.3		ug/L		89	70 - 130	
Dibromochloromethane	ND		25.0	21.9		ug/L		88	70 - 148	
Chloroethane	ND		25.0	21.7		ug/L		87	68 - 130	
Chloroform	ND		25.0	21.7		ug/L		87	70 - 130	
cis-1,3-Dichloropropene	ND		25.0	23.5		ug/L		94	70 - 133	
Bromodichloromethane	ND		25.0	23.0		ug/L		92	70 - 138	
Ethylbenzene	ND		25.0	23.4		ug/L		93	70 - 130	
Methylene Chloride	ND		25.0	19.7		ug/L		79	52 - 130	

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# QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-226883-A-1 MS

**Matrix: Water** 

Analysis Batch: 516443

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

Analysis Batch: 010440	Sample	Sample	Spike	мс	MS				%Rec.	
Analyte	•	Qualifier	Added	_	Qualifier	Unit	D	%Rec	Limits	
Tetrachloroethene	ND		25.0	24.2		ug/L		97	70 - 137	
Toluene	ND		25.0	22.2		ug/L		89	70 - 130	
trans-1,2-Dichloroethene	ND		25.0	23.5		ug/L		94	70 - 130	
trans-1,3-Dichloropropene	ND		25.0	22.2		ug/L		89	70 - 138	
Trichlorofluoromethane	ND		25.0	22.4		ug/L		89	60 - 150	
Vinyl chloride	ND		25.0	20.6		ug/L		82	50 - 137	
Trichloroethene	ND		25.0	23.5		ug/L		94	70 - 130	
cis-1,2-Dichloroethene	ND		25.0	22.8		ug/L		91	70 - 130	
Naphthalene	ND		25.0	24.9		ug/L		100	60 - 140	
Xylenes, Total	ND		50.0	48.8		ug/L		98	70 - 133	

MS MS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	95	80 - 120
Dibromofluoromethane (Surr)	91	76 - 132
Toluene-d8 (Surr)	95	80 - 128

Lab Sample ID: 440-226883-A-1 MSD

**Matrix: Water** 

Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

**Analysis Batch: 516443** %Rec. Sample Sample Spike MSD MSD **RPD** Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit 1,1,1-Trichloroethane ND 25.0 23.2 ug/L 93 70 - 130 4 20 1,1,2,2-Tetrachloroethane ND 25.0 26.4 ug/L 106 63 - 130 11 30 ug/L 1,1,2-Trichloroethane ND 25.0 24.7 99 70 - 130 25 6 ND 25.0 22.8 91 1,1-Dichloroethane ug/L 65 - 13020 1.1-Dichloroethene ND 25.0 24.2 ug/L 97 70 - 130 20 1,2-Dichlorobenzene ND 25.0 26.2 ug/L 105 70 - 130 20 1,2-Dichloroethane ND 25.0 20.1 ug/L 80 56 - 146 20 ND 1,2-Dichloropropane 25.0 24.7 99 69 - 130 20 ug/L 1,3-Dichlorobenzene ND 25.0 24.9 100 70 - 130 20 ug/L ND 98 20 1,4-Dichlorobenzene 25.0 ug/L 70 - 1305 24.4 Benzene ND 25.0 22.9 ug/L 92 66 - 130 2 20 59 - 150 Bromoform ND 25.0 23.6 ug/L 95 25 Bromomethane ND 25.0 20.8 ug/L 83 62 - 131 25 Carbon tetrachloride ND 25.0 23.5 ug/L 94 60 - 150 25 Chlorobenzene ND 25.0 23.3 ug/L 93 70 - 130 20 Dibromochloromethane ND 25.0 24.1 97 70 - 148 10 25 ug/L Chloroethane ND 25.0 22.5 ug/L 90 68 - 130 4 25 Chloroform ND 25.0 22.1 ug/L 89 70 - 1302 20 cis-1,3-Dichloropropene ND 25.0 24.7 ug/L 99 70 - 133 20 Bromodichloromethane ND 25.0 24.0 ug/L 96 70 - 138 20 Ethylbenzene ND 25.0 24.0 ug/L 96 70 - 130 20 Methylene Chloride 25.0 20.9 52 - 130 20 ND ug/L Tetrachloroethene 25.0 96 20 ND 24.1 ug/L 70 - 137 Toluene ND 25.0 22.8 ug/L 91 70 - 130 20 ND 96 20 trans-1,2-Dichloroethene 25.0 24 1 ug/L 70 - 130 3 trans-1,3-Dichloropropene ND 25.0 23.6 ug/L 95 70 - 138 6 25 Trichlorofluoromethane ND 25.0 21.6 ug/L 86 60 - 150 25

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

# Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-226883-A-1 MSD

**Matrix: Water** 

**Analysis Batch: 516443** 

Client Sample ID: Matrix Spike Duplicate **Prep Type: Total/NA** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Vinyl chloride	ND		25.0	20.4		ug/L		82	50 - 137	1	30
Trichloroethene	ND		25.0	23.9		ug/L		96	70 - 130	2	20
cis-1,2-Dichloroethene	ND		25.0	23.6		ug/L		94	70 - 130	3	20
Naphthalene	ND		25.0	27.5		ug/L		110	60 - 140	10	30
Xylenes, Total	ND		50.0	50.8		ug/L		102	70 - 133	4	20

MSD MSD

MB MB

Surrogate	%Recovery Q	ualifier	Limits
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	91		76 - 132
Toluene-d8 (Surr)	94		80 - 128

Lab Sample ID: MB 440-516966/4

**Matrix: Water** 

Analysis Batch: 516966

Client Sample ID: Method Blank Prep Type: Total/NA

Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND ND	0.50	0.25 ug/L			12/13/18 18:42	1
	MB MB						

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105	80 - 120		12/13/18 18:42	1
Dibromofluoromethane (Surr)	107	76 - 132		12/13/18 18:42	1
Toluene-d8 (Surr)	107	80 - 128		12/13/18 18:42	1

Lab Sample ID: LCS 440-516966/6

**Matrix: Water** 

Analysis Batch: 516966

Client Sample	ID: Lab Control Sample
	Prep Type: Total/NA

LCS LCS Spike %Rec. Added Analyte Result Qualifier Unit D %Rec Limits Chloromethane 25.0 22.2 ug/L 89 47 - 140

	LCS LC	S	
Surrogate	%Recovery Qu	ıalifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Lab Sample ID: 440-227268-C-6 MS

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ab Sample ID: 440-227268-C-6 MS	Client Sample ID: Matrix Spike
Matrix: Water	Prep Type: Total/NA
Analysis Batch: 516966	

MS MS Spike Sample Sample %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits Chloromethane ND 25.0 24.2 ug/L 97 39 - 144

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	99		80 - 128

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# QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

Lab Sample ID: 440-227268-C-6 MSD

TestAmerica Job ID: 440-226551-1

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

**Matrix: Water** Analysis Batch: 516966

Sample Sample Spike MSD MSD %Rec. RPD Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit 25.0 96 Chloromethane ND 23.9 ug/L 39 - 144 25

MSD MSD Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 103 80 - 120 Dibromofluoromethane (Surr) 108 76 - 132 97 Toluene-d8 (Surr) 80 - 128

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: LCSD 440-518857/3-A

Lab Sample ID: MB 440-518857/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 518896 Prep Batch: 518857** MB MB

RL Analyte Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac HEM (Oil & Grease) 5.0 1.4 mg/L 12/22/18 04:59 12/22/18 09:49 ND

Lab Sample ID: LCS 440-518857/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 518896 **Prep Batch: 518857** Spike LCS LCS %Rec. Added Result Qualifier Analyte Unit D %Rec Limits

HEM (Oil & Grease) 40.0 35.3 mg/L 88 78 - 114

**Matrix: Water** Prep Type: Total/NA Analysis Batch: 518896 **Prep Batch: 518857** Spike LCSD LCSD %Rec. **RPD** Added %Rec RPD Limit **Analyte** Result Qualifier Unit Limits

HEM (Oil & Grease) 40.0 36.0 mg/L 90 78 - 114 0 11

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

# **GC/MS VOA**

### **Analysis Batch: 515518**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-1	Outfall008_20181206 _Grab	Total/NA	Water	624	
440-226551-3	TB_20181206	Total/NA	Water	624	
MB 440-515518/4	Method Blank	Total/NA	Water	624	
LCS 440-515518/5	Lab Control Sample	Total/NA	Water	624	
440-226628-D-1 MS	Matrix Spike	Total/NA	Water	624	
440-226628-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

### **Analysis Batch: 516174**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-3	TB_20181206	Total/NA	Water	624	
MB 440-516174/4	Method Blank	Total/NA	Water	624	
LCS 440-516174/5	Lab Control Sample	Total/NA	Water	624	
320-45836-E-19 MS	Matrix Spike	Total/NA	Water	624	
320-45836-E-19 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

### **Analysis Batch: 516443**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-1	Outfall008_20181206 _Grab	Total/NA	Water	624	
MB 440-516443/4	Method Blank	Total/NA	Water	624	
LCS 440-516443/5	Lab Control Sample	Total/NA	Water	624	
440-226883-A-1 MS	Matrix Spike	Total/NA	Water	624	
440-226883-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

### **Analysis Batch: 516966**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-1 - RA	Outfall008_20181206 _Grab	Total/NA	Water	624	
MB 440-516966/4	Method Blank	Total/NA	Water	624	
LCS 440-516966/6	Lab Control Sample	Total/NA	Water	624	
440-227268-C-6 MS	Matrix Spike	Total/NA	Water	624	
440-227268-C-6 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

## **General Chemistry**

### **Prep Batch: 518857**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-1	Outfall008_20181206 _Grab	Total/NA	Water	1664A	
MB 440-518857/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-518857/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-518857/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

### **Analysis Batch: 518896**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-1	Outfall008_20181206 _Grab	Total/NA	Water	1664A	518857
MB 440-518857/1-A	Method Blank	Total/NA	Water	1664A	518857
LCS 440-518857/2-A	Lab Control Sample	Total/NA	Water	1664A	518857
LCSD 440-518857/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	518857

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

# **Biology**

**Analysis Batch: 516006** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226551-1	Outfall008_20181206	Total/NA	Water	SM 9221F	

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Grab

TestAmerica Job ID: 440-226551-1

## **Qualifiers**

## **GC/MS VOA**

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

## **Biology**

Qualifier	Qualifier Description
BU	Analyzed out of holding time
BV	Sample received after holding time expired

## Glossary

These commonly used abbreviations may or may not be present in this report.
Listed under the "D" column to designate that the result is reported on a dry weight basis
Percent Recovery
Contains Free Liquid
Contains No Free Liquid
Duplicate Error Ratio (normalized absolute difference)
Dilution Factor
Detection Limit (DoD/DOE)
Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	
LOD	Limit of Datastian (DaD/DOC)	

LDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Padio

MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)

MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated

ND	Not Detected at the reporting limit (or MDL or EDL if shown)	

PQL	Practical	Quantitation	I imit
I QL	i iacticai	Quantitation	

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

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## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226551-1

Project/Site: Annual Outfall 008 Grab

## **Laboratory: TestAmerica Irvine**

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Program State Program		<b>Identification Number</b>	Expiration Date		
California	State Pro			CA ELAP 2706	06-30-19		
0 ,	•	rt, but the laboratory	is not certified by the	e governing authority. This	list may include analytes for which		
the agency does not o	oner certification.						
Analysis Method	Prep Method	Matrix	Analyt	te			
0 ,		Matrix Water		te 2-Dichloroethene			
Analysis Method			cis-1,2	· ·			

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## CHAIN OF CUSTODY FORM



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									Α	Α	R	Α	А		VIJOU
Client Name	/Address.					Project:					AN	ALYS	IS REC	QUIRED	Field Readings Meter serial #
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Boeing-SSFL NPDES Permit 2018 Annual Outfall [008] Outfall 008 Grab										Field Readings: (Include units) Time of Readings: 0 9 /5			
	3269								Human (SAM348-357)			124)			pH 6 - 5 4pH unit Temp 7 - 3 4 69°F
TestAmerica's ser Agreement# 2015 TestAmerica Labo	vices under this CoC shall be performed in accordance -18-TestAmerica by and between Haley & Aldrich, Inc., oratories inc	with the T&Cs within Blanket Se its subsidiaries and affiliates, ar	ervice id			ger Katherir 6, 520 904.69			an (SAM		(W	n 11 (E6	E624)		
						Ÿ	`		Ĕ		1	ē	<u> </u>		Field readings QC
Sampler <del>: Da</del> プ	<del>nomin</del> Shu Auskes					ger: Mark Do 3, 818 599.07			MST-Bactenodales, H	E. coli (SM9221)	Oil & Grease (E1664A-HEM)	PP + xylenes, Freon 11 (E624)	- only A+A+2CVE (E624)		Checked by: 21 6 19/0915
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	MST-B	E. coli	Oil & G	VOCs PP	VOCs		Comments
,			WM	125 mL Sterile	_1	None	5	No	X.	وكوة					Deliver to lab ASAP 8 hr hold time SP DCC ref CUC
			WM	125 mL Sterile Poly	3	Na2S2O3	10	No		х					Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions
	Outfall008_20181206_Grab	12/6/2018	WM	1 L Glass Amber	2	HCI	15	No			Х				
Outfall 008		0915	WM	40 mL VOA	3	HCI	40	No				Х			
			WW	40 mL VOA	3	None	55	No					Х		
			WM	1 L Glass Amber	2	HCI	15	No			н				Hold
	Outfall008_20181206_Grab_Extra	12/6/2018	WM	40 mL VOA	3	HCI	40	No			<u> </u>	Н	<b> </b>		Hold
		1045	WM	40 mL VOA	3	None	55	No			<u> </u>	×	H		Hold
Trip Blanks	TB-20181206	12/6/2018	wa	40 mL VOA 40 mL VOA	2	HCI None	40 55	No No			-		X		1
			<b></b>		Lege	nd: R = Rou	tine, A =				Date	a/Time		IT	around time (Check)
Relinquished By		18/1430	Company	Hils	! , /s	1/6.16	Received	2	,	12.l	1.18		143	24 Ho	ur: 72 Hour 10 DayX ur: 5 Day: Normal
Relinquished B	Date/Time 12.6.18	1900	Company TA	IRV		, = 1	Received		<del>V</del>			e/Time		Intact:	
Relinquished B	y Date/⊺ime		Company				Received	Jul	7	TA 2/1	e l	& Ime	180	Data F	samples for 6 months           L 43           Requirements: (Check)           L 43           vel IV         All Level IV:X







Client: Haley & Aldrich, Inc.

Job Number: 440-226551-1

Login Number: 226551 List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Answer	Comment
True	
N/A	Not present
N/A	Not Present
True	
N/A	
True	
False	Headspace larger than 1/4" in one or more vials, one vial with accpt. headspace
True	
True	
N/A	
	True N/A N/A N/A True True True True True True True True

**TestAmerica Irvine** 

## **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226830-1

## **Prepared for**

Haley & Aldrich, Inc. 600 South Meyer Avenue, Suite 100 Tucson, Arizona 85701

11 January 2019





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- 2 Data Qualifier Reference
- 3 Reason Code Reference



## . INTRODUCTION

Task Order Title: Boeing SSFL NPDES
Contract: 40458-078 and 40458-083
MEC^x Project No.: 1272.003D.01 002
Sample Delivery Group: 440-226830-1

**Project Manager:** Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 2

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20181207_ Comp	440-226830-1	N/A	Water	12/07/2018 11:05 AM	E200.7, E200.8, E218.6, E245.1, E100.2 E300, E314.0, 525.2, E608, E625, SM2340, SM2540C/D, SM4500-CN-E, SM4500-NH3G, EPA- 821-R-02-013
Outfall008_20181207_ Comp_F	440-226830-2	N/A	Water	12/07/2018 11:05 AM	E200.7, E200.8, E245.1, SM2340



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226830-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.
- Sample Outfall008_20181207_Comp was submitted to Aquatic Bioassay Consulting Laboratories (ABC) for Method EPA-821-R-02-013 – Chronic Toxicity – Selenastrum
- Sample Outfall008_20181207_Comp was submitted to LA Testing for asbestos analysis.
- A correction to the original COC was not initialed and dated.



## **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



## **TABLE 3 - REASON CODE REFERENCE**

Reason	TABLE 3 - REASON CODE	
Code	Organic	Inorganic
Н	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
А	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



## III. METHODS 200.7, 200.8, 245.1 AND SM2340B — METALS, MERCURY AND HARDNESS

M. Hilchey of MEC^x reviewed the SDG on January 11, 2019.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7, 200.8 and 245.1, Standard Methods for the Examination of Water and Wastewater 2340B, and the National Functional Guidelines for Inorganic Data Review (2014).

#### **III.1. HOLDING TIMES**

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met. The COC required sample Outfall008_20181207_Comp_F to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved approximately 4 days after receipt. All results for this sample were qualified as estimated (UJ for nondetects, J for detects).

#### III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were ≤5%.

QAPP calibration criteria were met. A blank and two or three standards were used for calibration of ICP-AES target analytes, a blank and four standards were used for calibration of ICP-MS, and a blank and five standards were used for calibration of mercury. The initial calibration r values were ≥0.995. CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and mercury, and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110% for all methods.

#### **III.3. QUALITY CONTROL SAMPLES**

## III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks with the exception of total arsenic (9.9  $\mu$ g/L). The associated sample result was a detect greater than RL and <5× the blank concentration and was qualified as estimated with high bias (J+).

## III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or ±2× the reporting limit, whichever is greater. No interferents were present in the samples at concentrations comparable to those of the ICSs; therefore, interference was not evaluated.

#### III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the QAPP control limits of 85-115%.

## **III.3.4.** LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

## III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall008_20181207_Comp and Outfall008_20181207_Comp_F for all methods. Results were not assessed when the parent sample



concentration exceeded the spike amount by 4×. Recoveries and RPDs were within the QAPP control limits of 70-130% and ≤20%, respectively, for all target analytes

The laboratory did not perform post-digestion spike analyses.

#### III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

#### III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the ICP-MS calibration blank.

#### III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

#### III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### 11.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

## IV. EPA METHOD 608 – PESTICIDES AND PCBS

K. Zilis of MEC^x reviewed the SDG on January 11, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1), EPA Method 608, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

#### **IV.1. HOLDING TIMES**

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

#### **IV.2. CALIBRATION**

The initial calibration had %RSDs of  $\leq$ 10% or  $r^2$  of  $\geq$ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (ICV) %Ds were within the control limit of  $\leq$ 15%.



#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. METHOD BLANKS

The target compounds were not detected in method blanks.

#### IV.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPD were within the laboratory control limits. Toxaphene and chlordane were not spiked into the LCS samples.

#### IV.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample. PCB surrogate decachlorobiphenyl (DCB) was recovered within the laboratory control limit of 29-115%.

#### IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed due to a lack of sample volume. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

#### **IV.4. FIELD QC SAMPLES**

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

#### IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### IV.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### **IV.5. COMPOUND IDENTIFICATION**

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for seven Aroclors and 18 pesticide target compounds by Method 608.

#### **IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetects are valid to the reporting limit.



#### V. EPA METHOD 314.0 — PERCHLORATE

M. Hilchey of MEC^X reviewed the SDG on January 11, 2019.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 314.0, and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

## V.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

#### V.2. CALIBRATION

Calibration criteria were met. The initial calibration  $r^2$  value was  $\geq$ 0.995. The initial calibration recovery was within QAPP control limits of 75-125% and the continuing calibration recoveries were within QAPP control limits of 85-115%. The MRL was recovered within the QAPP control limits of 70-130%. Interference check sample recovery was within the QAPP control limits of 80-120%.

#### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. **METHOD BLANKS**

Method blanks and calibration blanks had no detects.

#### V.3.2. LABORATORY CONTROL SAMPLES

The LCS recovery was within the QAPP control limits of 85-115%.

#### V.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

#### V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

## V.4. SAMPLE RESULT VERIFICATION

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. The reported nondetect is valid to the MDL.

#### V.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

#### V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

## V.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.



#### VI. EPA METHOD 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCS)

## E. Wessling of MEC^x reviewed the SDG on January 18, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the  $MEC^{X}$  Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 525.2, and the National Functional Guidelines for Superfund Organic Methods Data Review (2017). The sample was validated at Level III.

#### VI.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted 4 days past the 24 holding time for diazinon. Diazinon was rejected in the site sample for grossly exceeding the holding time. Chlorpyrifos was extracted within seven days and analyzed within 30 days of extraction.

#### VI.2.GC/MS TUNING AND CALIBRATION

As the analyses were acquired in SIM mode, tuning was not applicable.

Calibration criteria were met. The initial calibration average RRFs were  $\geq$ 0.05 and %RSDs  $\leq$ 30% or  $r^2 \geq$ 0.990. The continuing calibration RRFs were  $\geq$ 0.05 and recoveries were within the method QC limits of 70-130%.

#### **VI.3. QUALITY CONTROL SAMPLES**

#### VI.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

## VI.3.2. LABORATORY CONTROL SAMPLES

The recoveries were within the laboratory control limits of 37-169% for chlorpyrifos and 43-152% for diazinon.

## VI.3.3. SURROGATE RECOVERY

Surrogates recovery for 1,3-dimethyl-2-nitrobenzene was below the control limits of 76-128%. Surrogate recovery was within the laboratory control limit of 40-163% for triphenyl phosphate. The sample result for chlorpyrifos was qualified as an estimated nondetect (UJ).

#### VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. Method accuracy was evaluated based upon LCS recoveries.

## VI.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

## VI.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



#### VI.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### VI.5. INTERNAL STANDARDS PERFORMANCE

The internal standard performance was not evaluated at Level III.

## **VI.6. COMPOUND IDENTIFICATION**

Compound identification was not verified at Level III. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2.

#### VI.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was not verified at Level III. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit. The sample was analyzed at a 5× dilution prior to analysis due to potential matrix interference. The reporting limits and MDLs were adjusted accordingly.

#### **VI.8. SYSTEM PERFORMANCE**

System performance was not evaluated at Level III.

#### VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCS)

K. Zilis of MEC^X reviewed the SDG on January 11, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 625, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

#### VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

#### VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with one exception. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were  $\leq$ 20% or  $r^2$  values  $\geq$ 0.990. ICV and CCV RRFs were within the method control limits. ICV recoveries were within 70-130% of the true value, and CCV %Ds were  $\leq$ 20%, except for the %D of benzidine with a high response of 20.1% with a limit of 20% for in the CCV associated with the sample analysis. No qualifier was applied.

#### VII.3. QUALITY CONTROL SAMPLES

#### VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.



#### VII.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPDs were within the laboratory control limits.

#### VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

#### VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed due to a lack of sample volume. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

#### VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

#### VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

#### VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ±30 seconds for retention times and -50%/+100% for internal standard areas.

#### VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 57 semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

#### VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit. The result reported below the RL and above the MDL was qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements.

## VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

#### VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.



#### VIII. VARIOUS METHODS — GENERAL CHEMISTRY

M. Hilchey of MEC^x reviewed the SDG on January 13, 2019.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Methods 100.2, 218.6, 300.0 and EPA-821-R-02-213, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G and 4500-CN-E and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

#### VIII.1. HOLDING TIMES

The QAPP holding time for asbestos (100.2), 48 hours to filter and UV/ozone treatment, was not met. The sample was received 5 days after collection, at which time it was subjected to UV and ozonation and filtered. The sample was analyzed 9 days after collection. The reviewer qualified the nondetect result as an estimated nondetect (UJ) as a conservative measure based on professional judgment. The analytical hold times for the remaining analyses, as listed below, were met:

- 48 hours from collection for nitrate as N and nitrite as N (300.0)
- 7 days for total dissolved solids (2540C)) and total suspended solids (2540D)
- 28 days for ammonia (4500-NH3-G), chloride, fluoride and sulfate (300.0)
- 14 days for total cyanide (4500-CN-E)
- 36 hours from collection for Chronic Toxicity Selenastrum (EPA-821-R-02-213)
- 24 hours from collection for hexavalent chromium (218.6)

#### VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration  $r^2$  values, as appropriate, were  $\geq 0.995$  and all initial calibration verification recoveries were within 95-105% for anions and 90-110% for the remaining analyses, as appropriate. All continuing calibration verification recoveries were within 90-110% for all appropriate analyses. The MRL recoveries for ammonia and hexavalent chromium were within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by the laboratory. Calibration information for asbestos analysis was not provided.

For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity. Method Test Acceptability criteria (TAC) were met.

#### VIII.3. QUALITY CONTROL SAMPLES

#### VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects. Method blank data for asbestos analysis was not provided. The laboratory negative controls were within the laboratory and method established compliance criteria for chronic toxicity.

#### VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. Positive controls were within the laboratory and method established compliance criteria for chronic toxicity.



#### VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analysis was performed on the sample in this SDG for TDS. The RPD was ≤10%. Laboratory duplicate analysis was not performed on the sample from this SDG for the remaining methods.

#### VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

#### VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. It should be noted that raw data was not provided for asbestos analysis; therefore, the sample result could not be verified. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Reported nondetects are valid to the MDL.

The method required 0.2 MFL analytical sensitivity was not reached for asbestos due to aliquot size. The reported analytical sensitivity for asbestos was 5.0 MFL.

## VIII.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

#### VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402268301

Analysis Method E200.7

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	9100	100	50	ug/L			
Arsenic	T	7440-38-2	13	10	8.9	ug/L		J+	В
Beryllium	T	7440-41-7	1.2	2.0	1.0	ug/L	J,DX	J	DNQ
Boron	T	7440-42-8	0.081	0.050	0.025	mg/L			
Chromium	T	7440-47-3	10	5.0	2.5	ug/L			
Iron	T	7439-89-6	9.5	0.10	0.050	mg/L			
Nickel	T	7440-02-0	18	10	5.0	ug/L			
Vanadium	T	7440-62-2	22	10	5.0	ug/L			
Zinc	T	7440-66-6	120	20	12	ug/L			

Sample Name OUTFALL008 20181207 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	D	7429-90-5	60	100	50	ug/L	J,DX	J	H, DNQ
Arsenic	D	7440-38-2		10	8.9	ug/L	U	UJ	Н
Beryllium	D	7440-41-7		2.0	1.0	ug/L	U	UJ	Н
Boron	D	7440-42-8	0.049	0.050	0.025	mg/L	J,DX	J	H, DNQ
Chromium	D	7440-47-3		5.0	2.5	ug/L	U	UJ	Н
Iron (Dissolved Lab)	D	7439-89-6DL	0.078	0.10	0.050	mg/L	J,DX	J	H, DNQ
Nickel	D	7440-02-0		10	5.0	ug/L	U	UJ	Н
Vanadium	D	7440-62-2		10	5.0	ug/L	U	UJ	Н
Zinc	D	7440-66-6		20	12	ug/L	U	UJ	H

Analysis Method E200.8

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.86	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	0.90	1.0	0.25	ug/L	J,DX	J	DNQ
Copper	T	7440-50-8	15	2.0	0.50	ug/L			
Lead	T	7439-92-1	54	1.0	0.50	ug/L			

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Analysis Method	E200.8								
Selenium	T	7782-49-2	2.1	2.0	0.50	ug/L			
Silver	T	7440-22-4		1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0		1.0	0.50	ug/L	U	U	

Sample Name OUTFALL008 20181207 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-2

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.79	2.0	0.50	ug/L	J,DX	J	H, DNQ
Cadmium	D	7440-43-9		1.0	0.25	ug/L	U	UJ	Н
Copper	D	7440-50-8	1.5	2.0	0.50	ug/L	J,DX	J	H, DNQ
Lead	D	7439-92-1		1.0	0.50	ug/L	U	UJ	Н
Selenium	D	7782-49-2	0.87	2.0	0.50	ug/L	J,DX	J	H, DNQ
Silver	D	7440-22-4		1.0	0.50	ug/L	U	UJ	Н
Thallium	D	7440-28-0		1.0	0.50	ug/L	U	UJ	Н

Analysis Method E218.6

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier Qualifier Notes Chromium VI (Hexavalent) 18540-29-9 1.0 0.25 U ug/L

Analysis Method E245.1

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Fraction: CAS No RLMDL Result Analyte Result Lab Validation Validation Value Units Qualifier Qualifier Notes 7439-97-6 U Mercury 0.20 0.10 ug/L U

Matrix Type:

Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

Sample Name OUTFALL008 20181207 COMP F

**Lab Sample Name:** 440-226830-2

**Analyte** Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier Qualifier Notes 0.20 0.10 ug/L Mercury 7439-97-6

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Analysis Method E300

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte	Fractio	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	2.3	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	0.30	0.50	0.25	mg/L	J,DX	J	DNQ
Nitrate (as N)	N	14797-55-8	1.4	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0		0.15	0.025	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.4	0.15	0.055	mg/L			
Sulfate	N	14808-79-8	5.1	0.50	0.25	mg/L			

Analysis Method E314.0

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Fraction: CAS No Result RLMDL Result Analyte Lab Validation Validation Value Units Qualifier Qualifier Notes Perchlorate 14797-73-0 4.0 0.95 ug/L U U

Analysis Method E525.2M

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

**Analyte** Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Qualifier Units Qualifier Notes Chlorpyrifos U. M-02 Ν 2921-88-2 50 34 ng/L UJ S Diazinon N 333-41-5 50 26 U, M-02 ng/L R н

Analysis Method E608

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte	Fractio	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8		0.0047	0.0037	ug/L	U	U	
4,4'-DDE	N	72-55-9		0.0047	0.0028	ug/L	U	U	
4,4'-DDT	N	50-29-3		0.0093	0.0037	ug/L	U	U	
Aldrin	N	309-00-2		0.0047	0.0014	ug/L	U	U	
alpha-BHC	N	319-84-6		0.0047	0.0023	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2		0.47	0.23	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2		0.47	0.23	ug/L	U	U	

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Analysis Method	E60	08						
Aroclor-1232 (PCB-1232)	N	11141-16-5	0.47	0.23	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	0.47	0.23	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	0.47	0.23	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	0.47	0.23	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	0.47	0.23	ug/L	U	U	
beta-BHC	N	319-85-7	0.0093	0.0037	ug/L	U	Ŭ	
Chlordane	N	57-74-9	0.093	0.075	ug/L	U	U	
delta-BHC	N	319-86-8	0.0047	0.0033	ug/L	U	Ŭ	
Dieldrin	N	60-57-1	0.0047	0.0019	ug/L	U	Ŭ	
Endosulfan I	N	959-98-8	0.0047	0.0028	ug/L	U	Ŭ	
Endosulfan II	N	33213-65-9	0.0047	0.0019	ug/L	U	Ŭ	
Endosulfan sulfate	N	1031-07-8	0.0093	0.0028	ug/L	U	Ŭ	
Endrin	N	72-20-8	0.0047	0.0019	ug/L	U	Ŭ	
Endrin aldehyde	N	7421-93-4	0.0093	0.0019	ug/L	U	Ŭ	
gamma-BHC (Lindane)	N	58-89-9	0.0093	0.0028	ug/L	U	U	
Heptachlor	N	76-44-8	0.0093	0.0028	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	0.0047	0.0023	ug/L	U	U	
Toxaphene	N	8001-35-2	0.47	0.23	ug/L	U	U	

Analysis Method E625

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1		1.00	0.200	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1		0.500	0.200	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7		1.00	0.200	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1		0.500	0.200	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7		0.500	0.200	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1		0.500	0.100	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2		1.00	0.100	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2		2.00	0.200	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9		2.00	0.500	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5		5.00	1.00	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2		5.00	2.00	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2		5.00	2.00	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7		0.500	0.100	ug/L	U	U	
2-Chlorophenol	N	95-57-8		1.00	0.100	ug/L	U	U	
2-Nitrophenol	N	88-75-5		2.00	0.200	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1		5.00	1.00	ug/L	U	U	
4,6-Dinitro-2-methylphenol	N	534-52-1		5.00	1.00	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3		1.00	0.100	ug/L	U	U	

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4-Chloro-3-methylphenol	N	59-50-7		2.00	0.200	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3		0.500	0.100	ug/L	U	U	
4-Nitrophenol	N	100-02-7		5.00	2.00	ug/L	U	U	
Acenaphthene	N	83-32-9		0.500	0.100	ug/L	U	U	
Acenaphthylene	N	208-96-8		0.500	0.100	ug/L	U	U	
Anthracene	N	120-12-7		0.500	0.100	ug/L	U	U	
Benzidine	N	92-87-5		10.0	5.00	ug/L	U	U	
Benzo(a)anthracene	N	56-55-3		5.00	1.00	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8		2.00	0.200	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2		2.00	0.300	ug/L	U	U	
Benzo(g,h,i)perylene	N	191-24-2		5.00	1.00	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9		0.500	0.100	ug/L	U	U	
bis(2-Chloroethoxy)methane	N	111-91-1		0.500	0.200	ug/L	U	U	
bis(2-Chloroethyl)ether	N	111-44-4		0.500	0.0500	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7		5.00	2.00	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7		5.00	2.00	ug/L	U	U	
Chrysene	N	218-01-9		0.500	0.100	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3		0.500	0.200	ug/L	U	U	
Diethyl phthalate	N	84-66-2		1.00	0.200	ug/L	U	U	
Dimethyl phthalate	N	131-11-3		0.500	0.100	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2		2.00	0.500	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0		5.00	1.00	ug/L	U	U	
Fluoranthene	N	206-44-0		0.500	0.100	ug/L	U	U	
Fluorene	N	86-73-7		0.500	0.100	ug/L	U	U	
Hexachlorobenzene	N	118-74-1		1.00	0.100	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3		2.00	0.500	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4		5.00	2.00	ug/L	U	U	
Hexachloroethane	N	67-72-1		3.00	0.500	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5		2.00	0.400	ug/L	U	U	
Isophorone	N	78-59-1		1.00	0.200	ug/L	U	U	
Naphthalene	N	91-20-3	0.104	1.00	0.0500	ug/L	J,DX	J	DNQ
Nitrobenzene	N	98-95-3		1.00	0.200	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9		2.00	0.300	ug/L	U	U	
N-Nitrosodi-n-propylamine	N	621-64-7		2.00	0.200	ug/L	U	U	
N-Nitrosodiphenylamine	N	86-30-6		1.00	0.200	ug/L	U	U	
Pentachlorophenol	N	87-86-5		2.00	1.00	ug/L	U	U	
Phenanthrene	N	85-01-8		0.500	0.100	ug/L	U	U	
Phenol	N	108-95-2		1.00	0.100	ug/L	U	U	
Pyrene	N	129-00-0		0.500	0.100	ug/L	U	U	

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Analysis Method EPA100.2

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

Analyte Fraction: CAS No. Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes 5.00 Asbestos 1332-21-4 MFL н

Analysis Method EPA-821-R-02-013

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Analyte Fraction: CAS No Result RL MDL Result Lab Validation Validation Value Units Qualifier Validation Notes

Chronic Toxicity, Selenastrum N CHRTOXSELEN -28.28 % SURV

Analysis Method SM2340

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Fraction: CAS No Result RLMDL Result Analyte Lab Validation Validation Value Units Qualifier **Qualifier Notes** Hardness as CaCO3 HARDNESSCA 180 0.33 0.17 mg/L CO3

Sample Name OUTFALL008 20181207 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-2

Fraction: CAS No Result RL MDL Result Analyte Lab Validation Validation Value Units **Qualifier** Qualifier Notes Hardness as CaCO3 HARDNESSCA 69 0.33 0.17 mg/L CO3

Analysis Method SM2540C

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

MDL Analyte Fraction: CAS No Result RLResult Lab Validation Validation Value Units Qualifier **Qualifier** Notes Total Dissolved Solids (TDS) TDS 120 10 5.0 mg/L

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Analysis Method SM2540D

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

**Analyte** Fraction: CAS No Result RL**MDL** Result Lab Validation Validation Qualifier Value Units **Qualifier** Notes 750 Total Suspended Solids (TSS) TSS 50 25 mg/L

Analysis Method SM4500-CN-E

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Fraction: CAS No MDL Analyte Result RLResult Lab Validation Validation Value Units **Qualifier** Qualifier Notes Cyanide 57-12-5 15 5.0 2.5 ug/L

Analysis Method SM4500-NH3G

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 8

**Lab Sample Name:** 440-226830-1

Fraction: CAS No RLMDL Analyte Result Result Lab Validation Validation Value Units Qualifier Qualifier Notes N 0.508 Ammonia (as N) 7664-41-7N 0.200 0.100 mg/L

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THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226830-1

Client Project/Site: Annual Outfall 008 Comp

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli Patel

Authorized for release by: 12/28/2018 4:10:39 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Usli fatel

Manager of Project Management

12/28/2018 4:10:39 PM

Urvashi Patel

TestAmerica Job ID: 440-226830-1

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and

are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are

attached have been evaluated for completeness and quality control acceptability.

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226830-1	Outfall008_20181207_Comp	Water	12/07/18 11:05	12/07/18 21:05
440-226830-2	Outfall008_20181207_Comp_F	Water	12/07/18 11:05 1	12/07/18 21:05

## **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

Job ID: 440-226830-1

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226830-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 3.5° C.

#### Receipt Exceptions

The reference method requires samples to be preserved to a pH <2. The following samples was received with insufficient preservation at a pH of 7: Outfall008_20181207_Comp (440-226830-1). The samples were preserved with 10mL of nitric acid reagent #1598157, at 16:00 on 12/11/18, to reach the appropriate pH of 2 in the laboratory for Radiologicals.

#### GC/MS Semi VOA

Method(s) 625: The following compounds were outside control limits in the continuing calibration verification (CCV) associated with batch 440-516279: Benzidine. These compounds are not classified as Calibration Check Compounds (CCCs) in the reference method, and the laboratory defaults to in-house and/or project-specific criteria for evaluation. The associated samples were non-detect for the affected analyte.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-516165 and analytical batch 440-516373. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch: (LCS 440-516165/4-A)

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-516165 and analytical batch 440-516104. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch: (LCS 440-516165/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

Method(s) 200.8: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-517388 and analytical batch 440-517466 were outside control limits for Antimony and Selenium. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) FILTRATION: The following sample requested dissolved metals and was not filtered in the field:
Outfall008_20181207_Comp_F (440-226830-2). This sample was filtered and preserved upon receipt to the laboratory. However, due to employee oversight this sample was not filtered within the 24hrs from receipt as required per client. The dissolve method was requested 3 days after sample receipt.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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## **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

## Job ID: 440-226830-1 (Continued)

## Laboratory: TestAmerica Irvine (Continued)

#### **General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### **Organic Prep**

Method(s) 3510C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510-8015B preparation batch 440-516165.

Method(s) 3520C, 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3520C_8270C/625-LL preparation batch 440-515842.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

Lab Sample ID: 440-226830-1

Matrix: Water

Client Sample ID: Outfall008_20181207_Comp Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

Method: 625 - Semivolatile C Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Acenaphthene	ND		0.500					12/12/18 01:44	
Acenaphthylene	ND		0.500	0.100	-			12/12/18 01:44	
Anthracene	ND		0.500	0.100	_			12/12/18 01:44	
Benzidine	ND		10.0		ug/L			12/12/18 01:44	
Benzo[a]anthracene	ND		5.00		-			12/12/18 01:44	
Benzo[b]fluoranthene	ND		2.00	0.300				12/12/18 01:44	
Benzo[k]fluoranthene	ND		0.500					12/12/18 01:44	
Benzo[a]pyrene	ND		2.00					12/12/18 01:44	
Bis(2-chloroethoxy)methane	ND		0.500	0.200				12/12/18 01:44	
Bis(2-chloroethyl)ether	ND		0.500	0.0500				12/12/18 01:44	
Bis(2-ethylhexyl) phthalate	ND		5.00		ug/L			12/12/18 01:44	
4-Bromophenyl phenyl ether	ND		1.00	0.100	ū			12/12/18 01:44	
Butyl benzyl phthalate	ND		5.00		ug/L			12/12/18 01:44	
4-Chloro-3-methylphenol	ND ND		2.00	0.200	-			12/12/18 01:44	
2-Chloronaphthalene	ND ND		0.500	0.200	-			12/12/18 01:44	
2-Chlorophenol	ND		1.00	0.100	_			12/12/18 01:44	
4-Chlorophenyl phenyl ether	ND ND		0.500	0.100	-			12/12/18 01:44	
Chrysene	ND ND		0.500	0.100	-			12/12/18 01:44	
Dibenz(a,h)anthracene	ND ND		0.500						
· · /	ND ND		2.00	0.200	-			12/12/18 01:44	
Di-n-butyl phthalate	ND ND		0.500	0.500	-			12/12/18 01:44	
1,2-Dichlorobenzene					ū			12/12/18 01:44	
1,3-Dichlorobenzene	ND		0.500	0.200	•			12/12/18 01:44	
1,4-Dichlorobenzene	ND		0.500	0.200	ū			12/12/18 01:44	
3,3'-Dichlorobenzidine	ND		5.00		ug/L			12/12/18 01:44	
2,4-Dichlorophenol	ND		2.00	0.200	-			12/12/18 01:44	
Diethyl phthalate	ND		1.00	0.200	J			12/12/18 01:44	
2,4-Dimethylphenol	ND		2.00	0.500	_			12/12/18 01:44	
Dimethyl phthalate	ND		0.500	0.100	-			12/12/18 01:44	
4,6-Dinitro-2-methylphenol	ND		5.00		ug/L			12/12/18 01:44	
2,4-Dinitrophenol	ND		5.00		ug/L			12/12/18 01:44	
2,4-Dinitrotoluene	ND		5.00		ug/L			12/12/18 01:44	
2,6-Dinitrotoluene	ND		5.00		ug/L			12/12/18 01:44	
Di-n-octyl phthalate	ND		5.00		ug/L			12/12/18 01:44	
1,2-Diphenylhydrazine(as	ND		1.00	0.200	ug/L		12/09/18 15:53	12/12/18 01:44	
Azobenzene)	ND		0.500	0.100	ua/l		12/00/19 15:52	10/10/10 01:44	
Fluoranthene	ND ND		0.500 0.500	0.100	-			12/12/18 01:44	
Fluorene								12/12/18 01:44	
Hexachlorobenzene	ND		1.00	0.100	-			12/12/18 01:44	
Hexachlorobutadiene Hexachloroethane	ND ND		2.00 3.00	0.500	-			12/12/18 01:44	
				0.500				12/12/18 01:44	
Hexachlorocyclopentadiene	ND		5.00		ug/L			12/12/18 01:44	
Indeno[1,2,3-cd]pyrene	ND		2.00	0.400	-			12/12/18 01:44	
Isophorone	ND		1.00	0.200				12/12/18 01:44	
Naphthalene	0.104	J,DX	1.00	0.0500	-			12/12/18 01:44	
Nitrobenzene	ND		1.00	0.200	-			12/12/18 01:44	
2-Nitrophenol	ND		2.00	0.200				12/12/18 01:44	
4-Nitrophenol	ND		5.00		ug/L			12/12/18 01:44	
N-Nitrosodimethylamine	ND		2.00	0.300	-			12/12/18 01:44	
N-Nitrosodiphenylamine	ND		1.00	0.200	ug/L		12/09/18 15:53	12/12/18 01:44	

TestAmerica Irvine

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

Lab Sample ID: 440-226830-1

**Matrix: Water** 

Client Sample ID: Outfall008_20181207_Comp Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodi-n-propylamine	ND		2.00	0.200	ug/L		12/09/18 15:53	12/12/18 01:44	1
Pentachlorophenol	ND		2.00	1.00	ug/L		12/09/18 15:53	12/12/18 01:44	1
Phenanthrene	ND		0.500	0.100	ug/L		12/09/18 15:53	12/12/18 01:44	1
Phenol	ND		1.00	0.100	ug/L		12/09/18 15:53	12/12/18 01:44	1
Pyrene	ND		0.500	0.100	ug/L		12/09/18 15:53	12/12/18 01:44	1
1,2,4-Trichlorobenzene	ND		1.00	0.200	ug/L		12/09/18 15:53	12/12/18 01:44	1
2,4,6-Trichlorophenol	ND		1.00	0.100	ug/L		12/09/18 15:53	12/12/18 01:44	1
Benzo[g,h,i]perylene	ND		5.00	1.00	ug/L		12/09/18 15:53	12/12/18 01:44	1
bis (2-chloroisopropyl) ether	ND		0.500	0.100	ug/L		12/09/18 15:53	12/12/18 01:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	78		50 - 120				12/09/18 15:53	12/12/18 01:44	1
2-Fluorophenol	71		30 - 120				12/09/18 15:53	12/12/18 01:44	1
2,4,6-Tribromophenol	98		40 - 120				12/09/18 15:53	12/12/18 01:44	1
Nitrobenzene-d5	81		45 - 120				12/09/18 15:53	12/12/18 01:44	1
Terphenyl-d14	120		37 - 144				12/09/18 15:53	12/12/18 01:44	1
Phenol-d6	85		35 - 120				12/09/18 15:53	12/12/18 01:44	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Aroclor 1221	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Aroclor 1232	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Aroclor 1242	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Aroclor 1248	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Aroclor 1254	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Aroclor 1260	ND		0.47	0.23	ug/L		12/11/18 05:36	12/11/18 17:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	90		29 - 115				12/11/18 05:36	12/11/18 17:47	1

Analyte	Result Qu	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND ND	0.0047	0.0014	ug/L		12/11/18 05:36	12/11/18 16:39	1
alpha-BHC	ND	0.0047	0.0023	ug/L		12/11/18 05:36	12/11/18 16:39	1
beta-BHC	ND	0.0093	0.0037	ug/L		12/11/18 05:36	12/11/18 16:39	1
Chlordane (technical)	ND	0.093	0.075	ug/L		12/11/18 05:36	12/11/18 16:39	1
delta-BHC	ND	0.0047	0.0033	ug/L		12/11/18 05:36	12/11/18 16:39	1
Dieldrin	ND	0.0047	0.0019	ug/L		12/11/18 05:36	12/11/18 16:39	1
Endosulfan I	ND	0.0047	0.0028	ug/L		12/11/18 05:36	12/11/18 16:39	1
Endosulfan II	ND	0.0047	0.0019	ug/L		12/11/18 05:36	12/11/18 16:39	1
Endosulfan sulfate	ND	0.0093	0.0028	ug/L		12/11/18 05:36	12/11/18 16:39	1
Endrin	ND	0.0047	0.0019	ug/L		12/11/18 05:36	12/11/18 16:39	1
Endrin aldehyde	ND	0.0093	0.0019	ug/L		12/11/18 05:36	12/11/18 16:39	1
gamma-BHC (Lindane)	ND	0.0093	0.0028	ug/L		12/11/18 05:36	12/11/18 16:39	1
Heptachlor	ND	0.0093	0.0028	ug/L		12/11/18 05:36	12/11/18 16:39	1
Heptachlor epoxide	ND	0.0047	0.0023	ug/L		12/11/18 05:36	12/11/18 16:39	1
Toxaphene	ND	0.47	0.23	ug/L		12/11/18 05:36	12/11/18 16:39	1
4,4'-DDD	ND	0.0047	0.0037	ug/L		12/11/18 05:36	12/11/18 16:39	1
4,4'-DDE	ND	0.0047	0.0028	ug/L		12/11/18 05:36	12/11/18 16:39	1

TestAmerica Irvine

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

Client Sample ID: Outfall008_20181207_Comp

Date Collected: 12/07/18 11:05

Lab Sample ID: 440-226830-1

Matrix: Water

Date Collected: 12/07/18 11:05 Date Received: 12/07/18 21:05

Cadmium

**Antimony** 

**Selenium** 

Thallium

Copper

Lead

Method: 608 Pesticides	- Organochlorine	<b>Pesticides</b>	Low level	(Continu	ıed)				
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDT	ND		0.0093	0.0037	ug/L		12/11/18 05:36	12/11/18 16:39	•
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Tetrachloro-m-xylene	65		10 - 150				12/11/18 05:36	12/11/18 16:39	
Method: 218.6 - Chromiu	ım. Hexavalent (l	on Chroma	tography)						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chromium, hexavalent	ND		1.0	0.25	ug/L			12/07/18 23:44	
Method: 300.0 - Anions,	Ion Chromatogra	phy							
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chloride	2.3		0.50	0.25	mg/L			12/07/18 21:48	
Nitrate as N	1.4		0.11	0.055	mg/L			12/07/18 21:48	
Fluoride	0.30	J,DX	0.50	0.25	mg/L			12/07/18 21:48	
Nitrite as N	ND		0.15	0.025	mg/L			12/07/18 21:48	
Sulfate	5.1		0.50	0.25	mg/L			12/07/18 21:48	
Method: 314.0 - Perchloi	rate (IC)								
Analyte	• •	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Perchlorate	ND		4.0	0.95	ug/L			12/10/18 12:58	
Method: NO3NO2 Calc -									
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Nitrate Nitrite as N	1.4		0.15	0.055	mg/L			12/18/18 14:50	
Method: 200.7 Rev 4.4 -	Metals (ICP) - Tot	tal Recover	able						
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Aluminum	9100		100	50	ug/L		12/16/18 11:30		
Arsenic	13		10		ug/L		12/16/18 11:30	12/17/18 09:38	
Boron	0.081		0.050	0.025	mg/L		12/16/18 11:30	12/17/18 09:38	
Beryllium	1.2	J,DX	2.0	1.0	ug/L		12/16/18 11:30	12/17/18 09:38	
Chromium	10		5.0		ug/L		12/16/18 11:30	12/17/18 09:38	
Iron	9.5		0.10	0.050	mg/L		12/16/18 11:30	12/17/18 09:38	
Nickel	18		10	5.0	ug/L		12/16/18 11:30	12/17/18 09:38	
Vanadium	22		10	5.0	ug/L		12/16/18 11:30	12/17/18 09:38	
Zinc	120		20	12	ug/L		12/16/18 11:30	12/17/18 09:38	
Method: 200.8 - Metals (	ICP/MS) - Total R	ecoverable							
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Silver	ND		1.0	0.50	ug/L		12/16/18 11:26	12/16/18 19:07	

 Method: 245.1 - Mercury (CVAA)

 Analyte
 Result
 Qualifier
 RL
 MDL
 Unit
 D
 Prepared
 Analyzed
 Dil Fac

 Mercury
 ND
 0.20
 0.10
 ug/L
 12/18/18 11:03
 12/18/18 15:38
 1

1.0

2.0

1.0

2.0

2.0

1.0

0.90 J,DX

0.86 J,DX

15

54

2.1

ND

0.25 ug/L

0.50 ug/L

0.50 ug/L

0.50 ug/L

0.50 ug/L

0.50 ug/L

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12/16/18 11:26 12/16/18 19:07

12/16/18 11:26 12/16/18 19:07

12/16/18 11:26 12/16/18 19:07

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Client Sample ID: Outfall008 20181207 Comp

TestAmerica Job ID: 440-226830-1

Lab Sample ID: 440-226830-1

**Matrix: Water** 

Date Collected: 12/07/18 11:05 Date Received: 12/07/18 21:05

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	180		0.33	0.17	mg/L			12/19/18 18:42	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	120		10	5.0	mg/L			12/11/18 14:10	1
<b>Total Suspended Solids</b>	750		50	25	mg/L			12/14/18 08:46	1
Cyanide, Total	15		5.0	2.5	ug/L		12/18/18 23:42	12/19/18 23:46	1
Ammonia (as N)	0.508		0.200	0.100	ma/l			12/19/18 15:06	1

Client Sample ID: Outfall008_20181207_Comp_F Lab Sample ID: 440-226830-2

Date Collected: 12/07/18 11:05 **Matrix: Water** 

Date Received: 12/07/18 21:05

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	60	J,DX	100	50	ug/L		12/17/18 11:56	12/17/18 19:42	1
Arsenic	ND		10	8.9	ug/L		12/17/18 11:56	12/17/18 19:42	1
Boron	0.049	J,DX	0.050	0.025	mg/L		12/17/18 11:56	12/17/18 19:42	1
Beryllium	ND		2.0	1.0	ug/L		12/17/18 11:56	12/17/18 19:42	1
Chromium	ND		5.0	2.5	ug/L		12/17/18 11:56	12/17/18 19:42	1
Iron	0.078	J,DX	0.10	0.050	mg/L		12/17/18 11:56	12/17/18 19:42	1
Nickel	ND		10	5.0	ug/L		12/17/18 11:56	12/17/18 19:42	1
Vanadium	ND		10	5.0	ug/L		12/17/18 11:56	12/17/18 19:42	1
Zinc	ND		20	12	ug/L		12/17/18 11:56	12/17/18 19:42	1

Method: 200.8 - Metals (ICP/MS) - Dissolved										
Analyte	Result Qualifier	RL	MDL Unit	D Prepared	Analyzed	Dil Fac				
Silver	ND —	1.0	0.50 ug/L	12/17/18 11:52	12/17/18 21:14	1				
Cadmium	ND	1.0	0.25 ug/L	12/17/18 11:52	12/17/18 21:14	1				
Copper	1.5 J,DX	2.0	0.50 ug/L	12/17/18 11:52	12/17/18 21:14	1				
Lead	ND	1.0	0.50 ug/L	12/17/18 11:52	12/17/18 21:14	1				
Antimony	0.79 J,DX	2.0	0.50 ug/L	12/17/18 11:52	12/17/18 21:14	1				
Selenium	0.87 J,DX	2.0	0.50 ug/L	12/17/18 11:52	12/17/18 21:14	1				
Thallium	ND	1.0	0.50 ug/L	12/17/18 11:52	12/17/18 21:14	1				

Method: 245.1 - Mercury (CVAA) - Dissolved										
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Mercury	ND		0.20	0.10	ug/L		12/12/18 21:39	12/13/18 21:30	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved											
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac				
Hardness, as CaCO3	69	0.33	0.17 mg/L			12/19/18 18:49	1				

# **Method Summary**

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Comp TestAmerica Job ID: 440-226830-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
100.2	EPA 100.2 Asbestos in Drinking Water	EPA	LA Testing
EPA	Bioassay	EPA	ABC
Subcontract	Weck- 525.2	None	Weck Lab
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV
625	Liquid-Liquid Extraction	40CFR136A	TAL IRV
Distill/CN	Distillation, Cyanide	None	TAL IRV
FILTRATION	Sample Filtration	None	TAL IRV

#### **Protocol References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

#### **Laboratory References:**

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Client Sample ID: Outfall008_20181207_Comp

Date Collected: 12/07/18 11:05 Date Received: 12/07/18 21:05

Lab Sample ID: 440-226830-1

Lab Sample ID: 440-226830-2

Matrix: Water

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	625			1000 mL	2.0 mL	515842	12/09/18 15:53	AJP	TAL IRV
Total/NA	Analysis	625		1			516279	12/12/18 01:44	HN	TAL IRV
Total/NA	Prep	608			1070 mL	2 mL	516165	12/11/18 05:36	L1H	TAL IRV
Total/NA	Analysis	608 PCB LL		1			516373	12/11/18 17:47	D1D	TAL IRV
Total/NA	Prep	608			1070 mL	2 mL	516165	12/11/18 05:36	L1H	TAL IRV
Total/NA	Analysis	608 Pesticides		1			516104	12/11/18 16:39	D1D	TAL IRV
Total/NA	Analysis	218.6		1			515510	12/07/18 23:44	RW	TAL IRV
Total/NA	Analysis	300.0		1			515570	12/07/18 21:48	NN	TAL IRV
Total/NA	Analysis	300.0		1			515571	12/07/18 21:48	NN	TAL IRV
Total/NA	Analysis	314.0		1			515889	12/10/18 12:58	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			517959	12/18/18 14:50	TLN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	517392	12/16/18 11:30	KE	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			518714	12/17/18 09:38	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	517388	12/16/18 11:26	KE	TAL IRV
Total Recoverable	Analysis	200.8		1			517466	12/16/18 19:07	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	517745	12/18/18 11:03	DB	TAL IRV
Total/NA	Analysis	245.1		1			518005	12/18/18 15:38	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			517415	12/19/18 18:42	P1R	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	516331	12/11/18 14:10	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	20 mL	1000 mL	517087	12/14/18 08:46	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	518050	12/18/18 23:42	QTN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			518292	12/19/18 23:46	QTN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	518382	12/19/18 15:06	KMY	TAL IRV

Client Sample ID: Outfall008_20181207_Comp_F

Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			270 mL	270 mL	516386	12/11/18 18:20	KE	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	517587	12/17/18 11:56	KE	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			517759	12/17/18 19:42	P1R	TAL IRV
Dissolved	Filtration	FILTRATION			270 mL	270 mL	516386	12/11/18 18:20	KE	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	517585	12/17/18 11:52	KE	TAL IRV
Dissolved	Analysis	200.8		1			517749	12/17/18 21:14	P1R	TAL IRV
Dissolved	Filtration	FILTRATION			270 mL	270 mL	516386	12/11/18 18:20	KE	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	516709	12/12/18 21:39	DB	TAL IRV
Dissolved	Analysis	245.1		1			517219	12/13/18 21:30	DB	TAL IR\
Dissolved	Analysis	SM 2340B		1			517011	12/19/18 18:49	P1R	TAL IR\

TestAmerica Irvine

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

#### **Laboratory References:**

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

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# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

# Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-515842/1-A

**Matrix: Water** 

**Client Sample ID: Method Blank** Prep Type: Total/NA

Analyzed	Dil Fac	6
/11/18 13:42	1	
/11/18 13:42	1	

IB MB  III Qualifier  ID  ID  ID  ID  ID  ID  ID  ID  ID  I	RL 0.500 0.500 0.500 10.0 5.00 2.00 0.500 2.00 0.500 0.500 0.500 5.00	MDL 0.100 0.100 0.100 5.00 1.00 0.300 0.100 0.200	ug/L ug/L ug/L ug/L ug/L ug/L	<u>D</u>	12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53	Analyzed 12/11/18 13:42 12/11/18 13:42 12/11/18 13:42 12/11/18 13:42 12/11/18 13:42	1
ID ID ID ID ID ID ID ID ID ID ID ID ID I	0.500 0.500 0.500 10.0 5.00 2.00 0.500 2.00 0.500 0.500	0.100 0.100 0.100 5.00 1.00 0.300 0.100 0.200	ug/L ug/L ug/L ug/L ug/L ug/L		12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53	12/11/18 13:42 12/11/18 13:42 12/11/18 13:42 12/11/18 13:42	1 1 1
ID ID ID ID ID ID ID ID ID ID ID ID ID I	0.500 0.500 10.0 5.00 2.00 0.500 2.00 0.500	0.100 0.100 5.00 1.00 0.300 0.100 0.200	ug/L ug/L ug/L ug/L ug/L		12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53	12/11/18 13:42 12/11/18 13:42 12/11/18 13:42	1
ID ID ID ID ID ID ID ID ID ID ID ID ID I	0.500 10.0 5.00 2.00 0.500 2.00 0.500	0.100 5.00 1.00 0.300 0.100 0.200 0.200	ug/L ug/L ug/L ug/L ug/L		12/09/18 15:53 12/09/18 15:53 12/09/18 15:53 12/09/18 15:53	12/11/18 13:42 12/11/18 13:42	1
ID ID ID ID ID ID ID ID ID ID ID ID ID	10.0 5.00 2.00 0.500 2.00 0.500	5.00 1.00 0.300 0.100 0.200 0.200	ug/L ug/L ug/L ug/L		12/09/18 15:53 12/09/18 15:53 12/09/18 15:53	12/11/18 13:42	
ID ID ID ID ID ID	5.00 2.00 0.500 2.00 0.500 0.500	1.00 0.300 0.100 0.200 0.200	ug/L ug/L ug/L		12/09/18 15:53 12/09/18 15:53		
ID ID ID ID ID ID	2.00 0.500 2.00 0.500 0.500	0.300 0.100 0.200 0.200	ug/L ug/L		12/09/18 15:53	12/11/18 13:42	1
ID ID ID ID ID	0.500 2.00 0.500 0.500	0.100 0.200 0.200	ug/L			40/44/40 40:40	1
ID ID ID ID	2.00 0.500 0.500	0.200 0.200	-		17/110/12 16.63		1
ID ID ID ID	0.500 0.500	0.200	ug/L			12/11/18 13:42	1
ID ID ID	0.500					12/11/18 13:42	1
ID ID						12/11/18 13:42	1
ID	5 00	0.0500	ū			12/11/18 13:42	1
		2.00	-			12/11/18 13:42	1
ID	1.00	0.100	-			12/11/18 13:42	1
	5.00	2.00	-			12/11/18 13:42	1
ID	2.00	0.200	-		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.100	-		12/09/18 15:53	12/11/18 13:42	1
ID	1.00	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	2.00	0.500	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	5.00	1.00			12/09/18 15:53	12/11/18 13:42	1
ID	2.00	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
ID	1.00	0.200	-		12/09/18 15:53	12/11/18 13:42	1
ID	2.00	0.500	-		12/09/18 15:53	12/11/18 13:42	1
ID	0.500	0.100	-		12/09/18 15:53	12/11/18 13:42	1
ID	5.00	1.00	-		12/09/18 15:53	12/11/18 13:42	1
ID	5.00	1.00	-		12/09/18 15:53	12/11/18 13:42	1
ID	5.00	2.00	-			12/11/18 13:42	1
			-				1
			-				1
			-				
	1.00	0.200	ug/L		12/00/10 10:00	12/11/10 10:12	
ID	0.500	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
	0.500		-		12/09/18 15:53	12/11/18 13:42	1
			-				1
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22 2222222222	ND ND ND ND ND ND ND ND ND ND ND ND ND N	ND         5.00           ND         1.00           ND         0.500           ND         0.500           ND         1.00           ND         3.00           ND         5.00           ND         2.00           ND         1.00           ND         1.00           ND         1.00           ND         1.00           ND         2.00           ND         5.00	ND         5.00         1.00           ND         1.00         0.200           ND         0.500         0.100           ND         0.500         0.100           ND         1.00         0.100           ND         2.00         0.500           ND         3.00         0.500           ND         5.00         2.00           ND         1.00         0.200           ND         1.00         0.0500           ND         1.00         0.200           ND         1.00         0.200           ND         2.00         0.200           ND         5.00         2.00           ND         5.00         2.00	ND         5.00         1.00         ug/L           ND         1.00         0.200         ug/L           ND         0.500         0.100         ug/L           ND         0.500         0.100         ug/L           ND         1.00         0.100         ug/L           ND         2.00         0.500         ug/L           ND         3.00         0.500         ug/L           ND         5.00         2.00         ug/L           ND         1.00         0.200         ug/L           ND         1.00         0.0500         ug/L           ND         1.00         0.200         ug/L           ND         1.00         0.200         ug/L           ND         2.00         0.200         ug/L           ND         2.00         0.200         ug/L           ND         5.00         2.00         ug/L	ND         5.00         1.00         ug/L           ND         1.00         0.200         ug/L           ND         0.500         0.100         ug/L           ND         0.500         0.100         ug/L           ND         1.00         0.100         ug/L           ND         2.00         0.500         ug/L           ND         3.00         0.500         ug/L           ND         5.00         2.00         ug/L           ND         1.00         0.200         ug/L           ND         1.00         0.0500         ug/L           ND         1.00         0.200         ug/L           ND         2.00         0.200         ug/L           ND         2.00         0.200         ug/L           ND         5.00         2.00         ug/L	ND         5.00         1.00         ug/L         12/09/18 15:53           ND         1.00         0.200         ug/L         12/09/18 15:53           ND         0.500         0.100         ug/L         12/09/18 15:53           ND         0.500         0.100         ug/L         12/09/18 15:53           ND         1.00         0.100         ug/L         12/09/18 15:53           ND         2.00         0.500         ug/L         12/09/18 15:53           ND         3.00         0.500         ug/L         12/09/18 15:53           ND         5.00         2.00         ug/L         12/09/18 15:53           ND         2.00         0.400         ug/L         12/09/18 15:53           ND         1.00         0.200         ug/L         12/09/18 15:53           ND         1.00         0.0500         ug/L         12/09/18 15:53           ND         1.00         0.0500         ug/L         12/09/18 15:53           ND         1.00         0.200         ug/L         12/09/18 15:53           ND         2.00         0.200         ug/L         12/09/18 15:53           ND         2.00         0.200         ug/L         12	ND         5.00         1.00         ug/L         12/09/18 15:53         12/11/18 13:42           ND         1.00         0.200         ug/L         12/09/18 15:53         12/11/18 13:42           ND         0.500         0.100         ug/L         12/09/18 15:53         12/11/18 13:42           ND         0.500         0.100         ug/L         12/09/18 15:53         12/11/18 13:42           ND         1.00         0.100         ug/L         12/09/18 15:53         12/11/18 13:42           ND         2.00         0.500         ug/L         12/09/18 15:53         12/11/18 13:42           ND         3.00         0.500         ug/L         12/09/18 15:53         12/11/18 13:42           ND         5.00         2.00         ug/L         12/09/18 15:53         12/11/18 13:42           ND         2.00         0.400         ug/L         12/09/18 15:53         12/11/18 13:42           ND         1.00         0.200         ug/L         12/09/18 15:53         12/11/18 13:42           ND         1.00         0.0500         ug/L         12/09/18 15:53         12/11/18 13:42           ND         1.00         0.0500         ug/L         12/09/18 15:53         12/11/18 13:42

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

# Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-515842/1-A

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 516279

Client Sample ID: Method Blank
Prep Type: Total/NA

Prep Batch: 515842

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodiphenylamine	ND		1.00	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
N-Nitrosodi-n-propylamine	ND		2.00	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
Pentachlorophenol	ND		2.00	1.00	ug/L		12/09/18 15:53	12/11/18 13:42	1
Phenanthrene	ND		0.500	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
Phenol	ND		1.00	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
Pyrene	ND		0.500	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
1,2,4-Trichlorobenzene	ND		1.00	0.200	ug/L		12/09/18 15:53	12/11/18 13:42	1
2,4,6-Trichlorophenol	ND		1.00	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1
Benzo[g,h,i]perylene	ND		5.00	1.00	ug/L		12/09/18 15:53	12/11/18 13:42	1
bis (2-chloroisopropyl) ether	ND		0.500	0.100	ug/L		12/09/18 15:53	12/11/18 13:42	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		50 - 120	12/09/18 15:53	12/11/18 13:42	1
2-Fluorophenol	67		30 - 120	12/09/18 15:53	12/11/18 13:42	1
2,4,6-Tribromophenol	81		40 - 120	12/09/18 15:53	12/11/18 13:42	1
Nitrobenzene-d5	78		45 - 120	12/09/18 15:53	12/11/18 13:42	1
Terphenyl-d14	98		37 - 144	12/09/18 15:53	12/11/18 13:42	1
Phenol-d6	76		35 - 120	12/09/18 15:53	12/11/18 13:42	1

Lab Sample ID: LCS 440-515842/2-A

**Matrix: Water** 

Analysis Batch: 516279

	Client Sample ID: Lab Control Sample
	Prep Type: Total/NA
	Prep Batch: 515842
^	0/ 5 -

Spike	LCS	LCS				%Rec. 515842
Added	Result	Qualifier	Unit	D	%Rec	Limits
10.0	7.889	-	ug/L		79	47 - 145
10.0	7.910		ug/L		79	33 - 145
10.0	8.757		ug/L		88	27 - 133
10.0	5.247	J,DX	ug/L		52	5 - 66
10.0	8.765		ug/L		88	33 - 143
10.0	9.096		ug/L		91	24 - 150
10.0	9.188		ug/L		92	11 - 150
10.0	8.937		ug/L		89	17 - 150
10.0	7.763		ug/L		78	33 - 150
10.0	7.341		ug/L		73	12 - 150
10.0	9.257		ug/L		93	10 - 150
10.0	8.372		ug/L		84	53 - 127
10.0	9.039		ug/L		90	10 - 150
10.0	8.907		ug/L		89	22 - 147
10.0	7.297		ug/L		73	60 - 118
10.0	6.557		ug/L		66	23 - 134
10.0	8.167		ug/L		82	25 - 150
10.0	8.691		ug/L		87	17 - 150
10.0	10.09		ug/L		101	10 - 150
10.0	9.379		ug/L		94	10 - 118
10.0	6.049		ug/L		60	32 - 129
10.0	5.712		ug/L		57	10 - 150
10.0	5.873		ug/L		59	20 - 124
10.0	8.202		ug/L		82	10 - 150
	Added  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0  10.0	Added         Result           10.0         7.889           10.0         7.910           10.0         8.757           10.0         5.247           10.0         8.765           10.0         9.096           10.0         9.188           10.0         7.763           10.0         7.341           10.0         9.257           10.0         8.372           10.0         9.039           10.0         8.907           10.0         6.557           10.0         8.691           10.0         10.09           10.0         9.379           10.0         6.049           10.0         5.712           10.0         5.873	Added         Result         Qualifier           10.0         7.889           10.0         7.910           10.0         8.757           10.0         5.247           10.0         8.765           10.0         9.096           10.0         9.188           10.0         7.763           10.0         7.341           10.0         9.257           10.0         8.372           10.0         9.039           10.0         8.907           10.0         7.297           10.0         8.691           10.0         9.379           10.0         9.379           10.0         6.049           10.0         5.712           10.0         5.873	Added         Result         Qualifier         Unit           10.0         7.889         ug/L           10.0         7.910         ug/L           10.0         8.757         ug/L           10.0         5.247         J,DX         ug/L           10.0         8.765         ug/L           10.0         9.096         ug/L           10.0         9.188         ug/L           10.0         8.937         ug/L           10.0         7.763         ug/L           10.0         7.341         ug/L           10.0         9.257         ug/L           10.0         8.372         ug/L           10.0         9.039         ug/L           10.0         8.907         ug/L           10.0         7.297         ug/L           10.0         8.657         ug/L           10.0         8.691         ug/L           10.0         9.379         ug/L           10.0         9.379         ug/L           10.0         6.049         ug/L           10.0         5.873         ug/L	Added         Result         Qualifier         Unit         D           10.0         7.889         ug/L           10.0         7.910         ug/L           10.0         8.757         ug/L           10.0         5.247         J,DX         ug/L           10.0         8.765         ug/L           10.0         9.096         ug/L           10.0         9.188         ug/L           10.0         8.937         ug/L           10.0         7.763         ug/L           10.0         7.341         ug/L           10.0         9.257         ug/L           10.0         8.372         ug/L           10.0         8.907         ug/L           10.0         7.297         ug/L           10.0         8.557         ug/L           10.0         8.691         ug/L           10.0         8.691         ug/L           10.0         9.379         ug/L           10.0         6.049         ug/L           10.0         5.712         ug/L           10.0         5.873         ug/L	Added         Result         Qualifier         Unit         D         %Rec           10.0         7.889         ug/L         79           10.0         7.910         ug/L         79           10.0         8.757         ug/L         88           10.0         5.247         J,DX         ug/L         52           10.0         8.765         ug/L         88           10.0         9.188         ug/L         91           10.0         9.188         ug/L         92           10.0         7.763         ug/L         89           10.0         7.341         ug/L         93           10.0         9.257         ug/L         93           10.0         8.372         ug/L         94           10.0         8.372         ug/L         89           10.0         8.907         ug/L         89           10.0         7.297         ug/L         89           10.0         6.557         ug/L         82           10.0         8.691         ug/L         87           10.0         10.09         ug/L         87           10.0         6.049 <t< td=""></t<>

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# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

# Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-515842/2-A

**Matrix: Water** 

**Analysis Batch: 516279** 

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515842

•	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2,4-Dichlorophenol	10.0	7.336		ug/L		73	39 - 135	
Diethyl phthalate	10.0	9.086		ug/L		91	10 - 114	
2,4-Dimethylphenol	10.0	7.681		ug/L		77	32 - 119	
Dimethyl phthalate	10.0	8.625		ug/L		86	10 - 112	
4,6-Dinitro-2-methylphenol	20.0	18.97		ug/L		95	10 - 150	
2,4-Dinitrophenol	20.0	14.32		ug/L		72	50 - 150	
2,4-Dinitrotoluene	10.0	8.465		ug/L		85	39 - 139	
2,6-Dinitrotoluene	10.0	8.689		ug/L		87	50 - 150	
Di-n-octyl phthalate	10.0	9.302		ug/L		93	10 - 146	
1,2-Diphenylhydrazine(as Azobenzene)	10.1	8.927		ug/L		88	47 - 116	
Fluoranthene	10.0	9.231		ug/L		92	26 - 137	
Fluorene	10.0	8.616		ug/L		86	59 - 121	
Hexachlorobenzene	10.0	8.728		ug/L		87	10 - 150	
Hexachlorobutadiene	10.0	4.885		ug/L		49	24 - 116	
Hexachloroethane	10.0	5.378		ug/L		54	40 - 113	
Hexachlorocyclopentadiene	10.0	3.913	J,DX	ug/L		39	10 - 67	
Indeno[1,2,3-cd]pyrene	10.0	10.69		ug/L		107	10 - 150	
Isophorone	10.0	8.898		ug/L		89	21 - 150	
Naphthalene	10.0	6.852		ug/L		69	21 - 133	
Nitrobenzene	10.0	7.348		ug/L		73	35 - 150	
2-Nitrophenol	10.0	6.910		ug/L		69	29 - 150	
4-Nitrophenol	20.0	14.83		ug/L		74	10 - 132	
N-Nitrosodimethylamine	10.0	8.208		ug/L		82	26 - 117	
N-Nitrosodiphenylamine	10.0	8.702		ug/L		87	54 ₋ 110	
N-Nitrosodi-n-propylamine	10.0	9.105		ug/L		91	10 - 150	
Pentachlorophenol	20.0	16.01		ug/L		80	14 - 150	
Phenanthrene	10.0	8.736		ug/L		87	54 - 120	
Phenol	10.0	7.217		ug/L		72	10 - 112	
Pyrene	10.0	8.942		ug/L		89	52 ₋ 115	
1,2,4-Trichlorobenzene	10.0	6.104		ug/L		61	44 - 142	
2,4,6-Trichlorophenol	10.0	8.220		ug/L		82	37 - 144	
Benzo[g,h,i]perylene	10.0	11.37		ug/L		114	10 - 150	
bis (2-chloroisopropyl) ether	10.0	6.514		ug/L		65	47 - 103	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2-Fluorobiphenyl	77		50 - 120
2-Fluorophenol	61		30 - 120
2,4,6-Tribromophenol	90		40 - 120
Nitrobenzene-d5	74		45 - 120
Terphenyl-d14	93		37 - 144
Phenol-d6	73		35 - 120

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# **QC Sample Results**

Spike

LCSD LCSD

Client: Haley & Aldrich, Inc.

**Analysis Batch: 516279** 

**Matrix: Water** 

Project/Site: Annual Outfall 008 Comp

Lab Sample ID: LCSD 440-515842/3-A

TestAmerica Job ID: 440-226830-1

# Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 515842 %Rec. RPD

Analyte	Added	Result Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Acenaphthene	10.0	7.202	ug/L		72	47 - 145	9	35	
Acenaphthylene	10.0	7.193	ug/L		72	33 - 145	9	35	
Anthracene	10.0	8.363	ug/L		84	27 - 133	5	35	
Benzidine	10.0	6.646 J,DX	ug/L		66	5 - 66	24	35	
Benzo[a]anthracene	10.0	8.660	ug/L		87	33 - 143	1	35	
Benzo[b]fluoranthene	10.0	9.402	ug/L		94	24 - 150	3	35	ī
Benzo[k]fluoranthene	10.0	9.013	ug/L		90	11 - 150	2	35	
Benzo[a]pyrene	10.0	9.126	ug/L		91	17 - 150	2	35	
Bis(2-chloroethoxy)methane	10.0	7.419	ug/L		74	33 - 150	5	35	
Bis(2-chloroethyl)ether	10.0	7.399	ug/L		74	12 - 150	1	35	
Bis(2-ethylhexyl) phthalate	10.0	9.150	ug/L		92	10 - 150	1	35	
4-Bromophenyl phenyl ether	10.0	7.826	ug/L		78	53 - 127	7	35	
Butyl benzyl phthalate	10.0	9.334	ug/L		93	10 - 150	3	35	
4-Chloro-3-methylphenol	10.0	7.851	ug/L		79	22 - 147	13	35	
2-Chloronaphthalene	10.0	6.738	ug/L		67	60 - 118	8	35	
2-Chlorophenol	10.0	6.770	ug/L		68	23 - 134	3	35	
4-Chlorophenyl phenyl ether	10.0	7.776	ug/L		78	25 - 150	5	35	
Chrysene	10.0	8.916	ug/L		89	17 - 150	3	35	
Dibenz(a,h)anthracene	10.0	9.731	ug/L		97	10 - 150	4	35	
Di-n-butyl phthalate	10.0	9.233	ug/L		92	10 - 118	2	35	
1,2-Dichlorobenzene	10.0	5.773	ug/L		58	32 - 129	5	35	
1,3-Dichlorobenzene	10.0	5.149	ug/L		51	10 - 150	10	35	
1,4-Dichlorobenzene	10.0	5.540	ug/L		55	20 - 124	6	35	
3,3'-Dichlorobenzidine	10.0	8.714	ug/L		87	10 - 150	6	35	
2,4-Dichlorophenol	10.0	7.154	ug/L		72	39 - 135	3	35	
Diethyl phthalate	10.0	9.152	ug/L		92	10 - 114	1	35	

2,4-Dimethylphenol 10.0 6.892 ug/L 69 32 - 11911 35 Dimethyl phthalate 10.0 8.200 ug/L 82 10 - 112 5 35 90 35 4,6-Dinitro-2-methylphenol 20.0 18.09 ug/L 10 - 150 5 2,4-Dinitrophenol 20.0 66 50 - 150 35 13.23 ug/L 8 2,4-Dinitrotoluene 85 35 10.0 8.476 ug/L 39 - 139 0 2,6-Dinitrotoluene 10.0 82 50 - 150 35 8.246 ug/L 5 10 - 146 Di-n-octyl phthalate 10.0 9.265 ug/L 93 O 35 1,2-Diphenylhydrazine(as 10.1 8.416 ug/L 83 47 - 116 35 Azobenzene) 10.0 9.066 ug/L 91 2 35 Fluoranthene 26 - 137 Fluorene 10.0 8.000 ug/L 80 59 - 121 7 35 8.385 84 10 - 150 35 Hexachlorobenzene 10.0 ug/L Hexachlorobutadiene 10.0 5.373 54 24 - 116 10 35 ug/L Hexachloroethane 10.0 5.615 ug/L 56 40 - 113 35 Hexachlorocyclopentadiene 10.0 4.328 J,DX 43 10 - 67 10 35 ug/L 35 Indeno[1,2,3-cd]pyrene 10.0 10.60 ug/L 106 10 - 150 Isophorone 10.0 7.991 ug/L 80 21 - 150 11 35 65 Naphthalene 10.0 6.524 ug/L 21 - 133 5 35 Nitrobenzene 10.0 7.336 ug/L 73 35 - 150 0 35 2-Nitrophenol 10.0 6.776 ug/L 68 29 - 150 2 35 4-Nitrophenol 20.0 15.63 ug/L 78 10 - 132 5 35 N-Nitrosodimethylamine 10.0 7.657 ug/L 77 26 - 117 35

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

### Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-515842/3-A **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA **Analysis Batch: 516279 Prep Batch: 515842** LCSD LCSD Spike **RPD** %Rec. Added Result Qualifier RPD Analyte Unit D %Rec Limits Limit 10.0 8.137 81 54 - 110 7 35 N-Nitrosodiphenylamine ug/L ug/L N-Nitrosodi-n-propylamine 10.0 8.278 83 10 - 150 10 35 Pentachlorophenol 20.0 14.87 74 14 - 150 7 35 ug/L Phenanthrene 10.0 8.403 ug/L 84 54 - 120 35 Phenol 10.0 7.700 ug/L 77 10 - 112 6 35 Pyrene 10.0 9.271 ug/L 93 52 - 115 4 35 ug/L 1,2,4-Trichlorobenzene 10.0 59 44 - 142 3 35 5.938 10.0 72 35 2,4,6-Trichlorophenol 7.197 ug/L 37 - 14413 Benzo[g,h,i]perylene 10.0 11.00 ug/L 110 10 - 150 3 35 10.0 65 47 - 103 0 35 bis (2-chloroisopropyl) ether 6.545 ug/L

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	70		30 - 120
2,4,6-Tribromophenol	84		40 - 120
Nitrobenzene-d5	74		45 - 120
Terphenyl-d14	95		37 - 144
Phenol-d6	72		35 - 120

#### Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-516165/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 516373 Prep Batch: 516165** MD MD

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1
Aroclor 1221	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1
Aroclor 1232	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1
Aroclor 1242	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1
Aroclor 1248	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1
Aroclor 1254	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1
Aroclor 1260	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 17:07	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	80		29 - 115	12/11/18 05:36	12/11/18 17:07	1

Lab Sample ID: LCS 440-516165/4-A

Aroclor 1260

**Matrix: Water** Prep Type: Total/NA **Analysis Batch: 516373 Prep Batch: 516165** Spike LCS LCS %Rec. Analyte Added Result Qualifier %Rec Unit Limits Aroclor 1016 4.00 3.33 ug/L 83 10 - 127

3.51

ug/L

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	89		29 - 115

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4.00

**Client Sample ID: Lab Control Sample** 

50 - 115

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12/28/2018

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

Lab Sample ID: LCSD 440-516165/5-A

**Matrix: Water** 

Analyte Aroclor 1016 Aroclor 1260

Analysis Batch: 516373

**Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA** 

**Prep Batch: 516165** 

		Spike	LCSD	LCSD				%Rec.	RPD		
		Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
i		4.00	3.47		ug/L		87	10 - 127	4	30	
		4.00	3.63		ug/L		91	50 ₋ 115	3	30	

LCSD LCSD

Surrogate %Recovery Qualifier Limits DCB Decachlorobiphenyl (Surr) 91

29 - 115

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-516165/1-A **Client Sample ID: Method Blank Matrix: Water** 

Analysis Batch: 516104

Prep Type: Total/NA Prep Batch: 516165

Analysis Batch: 516104								Prep Batch:	516165
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		12/11/18 05:36	12/11/18 15:54	1
alpha-BHC	ND		0.0050	0.0025	ug/L		12/11/18 05:36	12/11/18 15:54	1
beta-BHC	ND		0.010	0.0040	ug/L		12/11/18 05:36	12/11/18 15:54	1
Chlordane (technical)	ND		0.10	0.080	ug/L		12/11/18 05:36	12/11/18 15:54	1
delta-BHC	ND		0.0050	0.0035	ug/L		12/11/18 05:36	12/11/18 15:54	1
Dieldrin	ND		0.0050	0.0020	ug/L		12/11/18 05:36	12/11/18 15:54	1
Endosulfan I	ND		0.0050	0.0030	ug/L		12/11/18 05:36	12/11/18 15:54	1
Endosulfan II	ND		0.0050	0.0020	ug/L		12/11/18 05:36	12/11/18 15:54	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		12/11/18 05:36	12/11/18 15:54	1
Endrin	ND		0.0050	0.0020	ug/L		12/11/18 05:36	12/11/18 15:54	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		12/11/18 05:36	12/11/18 15:54	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		12/11/18 05:36	12/11/18 15:54	1
Heptachlor	ND		0.010	0.0030	ug/L		12/11/18 05:36	12/11/18 15:54	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		12/11/18 05:36	12/11/18 15:54	1
Toxaphene	ND		0.50	0.25	ug/L		12/11/18 05:36	12/11/18 15:54	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		12/11/18 05:36	12/11/18 15:54	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		12/11/18 05:36	12/11/18 15:54	1
4,4'-DDT	ND		0.010	0.0040	ug/L		12/11/18 05:36	12/11/18 15:54	1

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 10 - 150 <u>12/11/18 05:36</u> <u>12/11/18 15:54</u> Tetrachloro-m-xylene 73

Lab Sample ID: LCS 440-516165/2-A

**Matrix: Water** 

Analysis Batch: 516104

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA **Prep Batch: 516165** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Aldrin	0.200	0.149		ug/L		74	42 - 122	_
alpha-BHC	0.200	0.142		ug/L		71	37 - 134	
beta-BHC	0.200	0.149		ug/L		74	17 - 147	
delta-BHC	0.200	0.145		ug/L		73	19 - 140	
Dieldrin	0.200	0.156		ug/L		78	36 - 146	
Endosulfan I	0.200	0.154		ug/L		77	45 - 150	
Endosulfan II	0.200	0.155		ug/L		77	10 - 150	
Endosulfan sulfate	0.200	0.156		ug/L		78	26 - 144	
Endrin	0.200	0.160		ug/L		80	30 - 147	

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**Client Sample ID: Lab Control Sample Dup** 

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25 - 150

35

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

#### Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-516165/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 516104 Prep Batch: 516165** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Endrin aldehyde	0.200	0.151		ug/L		76	47 - 115	
gamma-BHC (Lindane)	0.200	0.142		ug/L		71	32 - 127	
Heptachlor	0.200	0.150		ug/L		75	34 - 115	
Heptachlor epoxide	0.200	0.153		ug/L		77	37 - 142	
4,4'-DDD	0.200	0.159		ug/L		79	31 - 141	
4,4'-DDE	0.200	0.153		ug/L		77	30 - 145	
4,4'-DDT	0.200	0.159		ug/L		79	25 - 150	

LCS LCS

Limits Surrogate %Recovery Qualifier Tetrachloro-m-xylene 66 10 - 150

Lab Sample ID: LCSD 440-516165/3-A

**Matrix: Water** 

Prep Type: Total/NA **Analysis Batch: 516104 Prep Batch: 516165** LCSD LCSD Spike %Rec. **RPD** Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit Aldrin 0.200 0.163 42 - 122 9 ug/L 82 35 0.200 alpha-BHC 0.156 ug/L 78 37 - 13410 35 beta-BHC 0.200 0.164 ug/L 82 17 - 147 10 35 19 - 140 delta-BHC 0.200 0.160 ug/L 80 10 35 Dieldrin 0.200 0.172 86 36 - 146 9 35 ug/L Endosulfan I 0.200 85 45 - 150 9 35 0.169 ug/L Endosulfan II 0.200 0.170 ug/L 85 10 - 150 10 35 Endosulfan sulfate 0.200 0.173 86 26 - 144 35 ug/L 10 Endrin 0.200 0.175 ug/L 88 30 - 147 9 35 ug/L Endrin aldehyde 0.200 0.168 84 47 - 115 11 35 gamma-BHC (Lindane) 0.200 0.156 ug/L 78 32 - 12710 35 Heptachlor 0.200 0.166 ug/L 83 34 - 115 10 35 37 - 142 Heptachlor epoxide 0.200 0.168 ug/L 84 10 35 4,4'-DDD 87 0.200 0.174 ug/L 31 - 141 9 35 4,4'-DDE 35 0.200 0.168 ug/L 84 30 - 1459

LCSD LCSD

Surrogate %Recovery Qualifier Limits 10 - 150 Tetrachloro-m-xylene 73

#### Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-515510/6 **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

0.178

ug/L

0.200

**Analysis Batch: 515510** 

4,4'-DDT

MB MB **Analyte** Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac Chromium, hexavalent  $\overline{\mathsf{ND}}$ 1.0 0.25 ug/L 12/07/18 07:06

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12/28/2018

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: LCS 440-515510/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 515510** 

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 50.0 Chromium, hexavalent 48.7 ug/L 97 90 - 110

Lab Sample ID: MRL 440-515510/4 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 515510** Spike MRL MRL

%Rec. Added Limits Analyte Result Qualifier Unit %Rec Chromium, hexavalent 1.00 0.981 J.DX ug/L 98 50 - 150

Client Sample ID: Matrix Spike Lab Sample ID: 440-226746-C-1 MS Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 515510

Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Limits Analyte Unit D %Rec Chromium, hexavalent ND 50.0 49.1 98 90 - 110 ug/L

Lab Sample ID: 440-226746-C-1 MSD **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 515510** 

Sample Sample Spike MSD MSD %Rec. RPD Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Chromium, hexavalent ND 50.0 48.8 98 ug/L 90 _ 110

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-515570/6 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 515570** 

	IVID	IVID									
Analyte	Result	Qualifier	RL	MDL	Unit	D	)	Prepared	Analyzed	Dil Fac	
Nitrate as N	ND		0.11	0.055	mg/L		_		12/07/18 13:55	1	
Nitrite as N	ND		0.15	0.025	mg/L				12/07/18 13:55	1	

Lab Sample ID: LCS 440-515570/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515570

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits Nitrate as N 1.13 1.08 mg/L 95 90 - 110 Nitrite as N 1.52 1.58 mg/L 104 90 - 110

Lab Sample ID: 440-226786-H-1 MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515570

Sample Sample Spike MS MS %Rec. Result Qualifier Added Limits Analyte Result Qualifier Unit D %Rec Nitrate as N 3.5 1.13 4.74 mg/L 107 80 - 120 Nitrite as N ND 1.52 1.73 80 - 120 mg/L 114

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Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike** 

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

### Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-226786-H-1 MSD

**Matrix: Water** 

Analysis Batch: 515570

_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Nitrate as N	3.5		1.13	4.74		mg/L		107	80 - 120	0	20	
Nitrite as N	ND		1.52	1.73		mg/L		114	80 - 120	0	20	

Lab Sample ID: MB 440-515571/6

**Matrix: Water** 

Analysis Batch: 515571

**Client Sample ID: Method Blank Prep Type: Total/NA** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Chloride ND 0.50 0.25 mg/L 12/07/18 13:55 Fluoride ND 0.50 0.25 mg/L 12/07/18 13:55 Sulfate ND 0.50 0.25 mg/L 12/07/18 13:55

Lab Sample ID: LCS 440-515571/5

**Matrix: Water** 

**Analysis Batch: 515571** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.00	4.72		mg/L		94	90 - 110	
Fluoride	5.00	4.62		mg/L		92	90 - 110	
Sulfate	5.00	4.72		mg/L		94	90 - 110	

Lab Sample ID: 440-226786-H-1 MS

**Matrix: Water** 

Analysis Batch: 515571

Allalysis Batchi o loor i										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	110	EY	5.00	119	EY BB	mg/L		125	80 - 120	
Fluoride	0.42	J,DX	5.00	4.68		mg/L		85	80 - 120	
Sulfate	190	EY	5.00	200	EY BB	mg/L		122	80 - 120	

Lab Sample ID: 440-226786-H-1 MSD

**Matrix: Water** 

Analysis Ratch: 515571

Alialysis Balcii. 51557 i	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	110	EY	5.00	119	EY BB	mg/L		123	80 - 120	0	20
Fluoride	0.42	J,DX	5.00	4.67		mg/L		85	80 - 120	0	20
Sulfate	190	EY	5.00	199	EY BB	mg/L		118	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-515889/6

**Matrix: Water** 

Analysis Batch: 515889	МВ	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/10/18 09:18	1

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**Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA** 

Prep Type: Total/NA

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: LCS 440-515889/5 **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** 

Analysis Batch: 515889

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 25.0 Perchlorate 25.3 ug/L 101 85 - 115

Lab Sample ID: MRL 440-515889/4 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 515889** 

Spike MRL MRL %Rec. Added Limits Analyte Result Qualifier Unit %Rec Perchlorate 1.00 ND ug/L 92 75 - 125

Lab Sample ID: 720-90134-E-5 MS **Client Sample ID: Matrix Spike Prep Type: Total/NA** 

**Matrix: Water** 

Analysis Batch: 515889 Sample Sample Spike MS MS %Rec.

Result Qualifier Added Result Qualifier Limits Analyte Unit D %Rec Perchlorate ND 25.0 26.6 ug/L 106 80 - 120

Lab Sample ID: 720-90134-E-5 MSD **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 515889** 

Sample Sample Spike MSD MSD %Rec. RPD Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Perchlorate  $\overline{\mathsf{ND}}$ 25.0 26.0 104 80 - 120 15 ug/L

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-517392/1-A Client Sample ID: Method Blank **Matrix: Water Prep Type: Total Recoverable** 

Beryllium

Analysis Batch: 518714 **Prep Batch: 517392** MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	50	ug/L		12/16/18 11:30	12/17/18 09:33	1
Arsenic	ND		10	8.9	ug/L		12/16/18 11:30	12/17/18 09:33	1
Boron	ND		0.050	0.025	mg/L		12/16/18 11:30	12/17/18 09:33	1
Beryllium	ND		2.0	1.0	ug/L		12/16/18 11:30	12/17/18 09:33	1
Chromium	ND		5.0	2.5	ug/L		12/16/18 11:30	12/17/18 09:33	1
Iron	ND		0.10	0.050	mg/L		12/16/18 11:30	12/17/18 09:33	1
Nickel	ND		10	5.0	ug/L		12/16/18 11:30	12/17/18 09:33	1
Vanadium	ND		10	5.0	ug/L		12/16/18 11:30	12/17/18 09:33	1
Zinc	ND		20	12	ug/L		12/16/18 11:30	12/17/18 09:33	1

Lab Sample ID: LCS 440-517392/2-A **Client Sample ID: Lab Control Sample Prep Type: Total Recoverable Matrix: Water** 

**Analysis Batch: 518714 Prep Batch: 517392** LCS LCS Spike %Rec. Added Analyte Result Qualifier Unit %Rec Limits Aluminum 500 491 98 85 - 115 ug/L Arsenic 500 483 ug/L 97 85 - 115 Boron 0.500 0.488 mg/L 98 85 - 115

497

500

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99

85 - 115

ug/L

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Lab Sample ID: 440-226830-1 MS

**Matrix: Water** 

### Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-517392/2-A Matrix: Water				Client Sample ID: Lab Control Samp Prep Type: Total Recoveral						
Analysis Batch: 518714	Spike	LCS	LCS				Prep Batch: 517392 %Rec.			
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits			
Calcium	2.50	2.50		mg/L		100	85 - 115			
Chromium	500	498		ug/L		100	85 ₋ 115			
Iron	0.500	0.494		mg/L		99	85 - 115			
Magnesium	2.50	2.47		mg/L		99	85 - 115			
Nickel	500	499		ug/L		100	85 ₋ 115			
Vanadium	500	495		ug/L		99	85 - 115			
Zinc	500	496		ug/L		99	85 - 115			

Client Sample ID: Outfall008_20181207_Comp

103

98

70 - 130

70 - 130

**Prep Type: Total Recoverable** 

Prep Batch: 517392

Analysis Batch: 518714	Sample	Sample	Spike	MS	MS				Prep Batch: 51739 %Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Aluminum	9100		500	13600	BB	ug/L		902	70 - 130
Arsenic	13		500	503		ug/L		98	70 - 130
Boron	0.081		0.500	0.593		mg/L		102	70 - 130
Beryllium	1.2	J,DX	500	512		ug/L		102	70 - 130
Calcium	59		2.50	62.2	BB	mg/L		134	70 - 130
Chromium	10		500	510		ug/L		100	70 - 130
Iron	9.5		0.500	9.88	BB	mg/L		82	70 - 130
Magnesium	7.6		2.50	10.2		mg/L		105	70 - 130
Nickel	18		500	512		ug/L		99	70 - 130
Vanadium	22		500	531		ug/L		102	70 - 130
Zinc	120		500	609		ug/L		98	70 - 130

Lab Sample ID: 440-226830-1 MSD Client Sample ID: Outfall008_20181207_Comp **Matrix: Water Prep Type: Total Recoverable** 

22

120

MD MD

**Analysis Batch: 518714 Prep Batch: 517392** Sample Sample Spike MSD MSD %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Aluminum 9100 500 12700 BB ug/L 726 70 - 130 20 Arsenic 500 503 13 ug/L 98 70 - 130 0 20 0.081 0.596 Boron 0.500 mg/L 103 70 - 130 20 Beryllium 1.2 J,DX 500 516 103 70 - 130 20 ug/L 2.50 Calcium 59 60.5 BB mg/L 64 70 - 130 20 101 Chromium 10 500 ug/L 70 - 130 20 518 Iron 9.5 0.500 9.22 BB mg/L -51 70 - 130 20 7.6 2.50 9.89 93 70 - 130 20 Magnesium mg/L Nickel 18 500 516 ug/L 100 70 - 130 20

Lab Sample ID: MB 440-516386/1-D **Client Sample ID: Method Blank Matrix: Water Prep Type: Dissolved** 

537

609

500

500

**Analysis Batch: 517759** 

Vanadium

Zinc

	IAID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	50	ug/L		12/17/18 11:56	12/17/18 19:37	1
Arsenic	ND		10	8.9	ug/L		12/17/18 11:56	12/17/18 19:37	1

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Prep Batch: 517587

20

20

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ug/L

ug/L

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Comp

#### Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: MB 440-516386/1-D

Lab Sample ID: LCS 440-516386/2-D

**Matrix: Water** 

**Matrix: Water** 

**Analysis Batch: 517759** 

**Client Sample ID: Method Blank Prep Type: Dissolved** 

Prep Batch: 517587

MB MB **MDL** Unit Analyte Result Qualifier RL Prepared Analyzed Dil Fac Boron  $\overline{\mathsf{ND}}$ 0.050 0.025 mg/L 12/17/18 11:56 12/17/18 19:37 Beryllium ND 2.0 1.0 ug/L 12/17/18 11:56 12/17/18 19:37 Chromium ND 5.0 2.5 ug/L 12/17/18 11:56 12/17/18 19:37 Iron ND 0.10 0.050 mg/L 12/17/18 11:56 12/17/18 19:37 Nickel ND 10 5.0 ug/L 12/17/18 11:56 12/17/18 19:37 Vanadium ND 10 5.0 ug/L 12/17/18 11:56 12/17/18 19:37 Zinc ND 20 12 ug/L 12/17/18 11:56 12/17/18 19:37

> Client Sample ID: Lab Control Sample **Prep Type: Dissolved**

Prep Batch: 517587 %Rec.

**Analysis Batch: 517759** LCS LCS Spike Analyte Added Result Qualifier Unit D %Rec Limits 500 477 ug/L 95 85 - 115 Aluminum ug/L Arsenic 500 483 97 85 - 115 0.500 0.487 97 Boron mg/L 85 - 115Beryllium 500 490 ug/L 98 85 - 115 Calcium 2.50 2.46 98 85 - 115 mg/L Chromium 98 500 492 ug/L 85 - 115 Iron 0.500 0.488 mg/L 98 85 - 115 97 85 - 115 Magnesium 2.50 2.42 mg/L 489 Nickel 500 ug/L 98 85 - 115 Vanadium 500 489 ug/L 98 85 - 115 Zinc 500 487 ug/L 97 85 - 115

Lab Sample ID: 440-226830-2 MS Client Sample ID: Outfall008_20181207_Comp_F

**Matrix: Water** 

Analysis Batch: 517759

**Prep Type: Dissolved** Prep Batch: 517587

7 maryolo Batom 017700	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	•	Qualifier	Added	_	Qualifier	Unit	D	%Rec	Limits
Aluminum	60	J,DX	500	552		ug/L		98	70 - 130
Arsenic	ND		500	485		ug/L		97	70 - 130
Boron	0.049	J,DX	0.500	0.531		mg/L		96	70 - 130
Beryllium	ND		500	486		ug/L		97	70 - 130
Calcium	22		2.50	24.1	BB	mg/L		90	70 - 130
Chromium	ND		500	487		ug/L		97	70 - 130
Iron	0.078	J,DX	0.500	0.556		mg/L		96	70 - 130
Magnesium	3.5		2.50	5.84		mg/L		95	70 - 130
Nickel	ND		500	478		ug/L		96	70 - 130
Vanadium	ND		500	487		ug/L		97	70 - 130
Zinc	ND		500	486		ug/L		97	70 - 130

Lab Sample ID: 440-226830-2 MSD Client Sample ID: Outfall008_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

Prep Batch: 517587 **Analysis Batch: 517759** MSD MSD **RPD** Sample Sample Spike %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits **RPD** Limit 70 - 130 Aluminum 60 J,DX 500 552 ug/L 98 n 20 Arsenic ND 500 485 ug/L 97 70 - 130 n 20

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-226830-2 MSD **Matrix: Water** 

Analysis Batch: 517759

Client Sample ID: Outfall008_20181207_Comp_F

**Prep Type: Dissolved Prep Batch: 517587** 

Analysis Baton. 011100									I ICP D	aton. o	
_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	0.049	J,DX	0.500	0.530	-	mg/L		96	70 - 130	0	20
Beryllium	ND		500	485		ug/L		97	70 - 130	0	20
Calcium	22		2.50	24.0	BB	mg/L		84	70 - 130	1	20
Chromium	ND		500	484		ug/L		97	70 - 130	1	20
Iron	0.078	J,DX	0.500	0.558		mg/L		96	70 - 130	0	20
Magnesium	3.5		2.50	5.85		mg/L		96	70 - 130	0	20
Nickel	ND		500	479		ug/L		96	70 - 130	0	20
Vanadium	ND		500	485		ug/L		97	70 - 130	0	20
Zinc	ND		500	485		ug/L		97	70 - 130	0	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-517388/1-A

**Matrix: Water** 

Analysis Batch: 517466

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

**Prep Batch: 517388** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Silver ND 1.0 0.50 ug/L <u>12/16/18 11:26</u> <u>12/16/18 19:01</u> Cadmium ND 1.0 0.25 ug/L 12/16/18 11:26 12/16/18 19:01 ND 2.0 0.50 ug/L Copper 12/16/18 11:26 12/16/18 19:01 Lead ND 1.0 0.50 ug/L 12/16/18 11:26 12/16/18 19:01 12/16/18 11:26 12/16/18 19:01 Antimony ND 2.0 0.50 ug/L Selenium ND 2.0 0.50 ug/L 12/16/18 11:26 12/16/18 19:01 Thallium ND 1.0 0.50 ug/L 12/16/18 11:26 12/16/18 19:01

Lab Sample ID: LCS 440-517388/2-A

**Matrix: Water** 

**Analysis Batch: 517466** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 517388** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	80.0	77.7		ug/L		97	85 - 115	
Cadmium	80.0	77.9		ug/L		97	85 - 115	
Copper	80.0	78.8		ug/L		98	85 - 115	
Lead	80.0	77.6		ug/L		97	85 - 115	
Antimony	80.0	89.4		ug/L		112	85 - 115	
Selenium	80.0	78.4		ug/L		98	85 - 115	
Thallium	80.0	77.5		ug/L		97	85 - 115	

Lab Sample ID: 440-226830-1 MS

**Matrix: Water** 

**Analysis Batch: 517466** 

Client Sample ID: Outfall008 20181207 Comp **Prep Type: Total Recoverable** 

**Prep Batch: 517388** 

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	ND		80.0	79.8		ug/L		100	70 - 130	
Cadmium	0.90	J,DX	80.0	80.4		ug/L		99	70 - 130	
Copper	15		80.0	89.5		ug/L		94	70 - 130	
Lead	54		80.0	128		ug/L		93	70 - 130	
Antimony	0.86	J,DX	80.0	68.8		ug/L		85	70 - 130	
Selenium	2.1		80.0	72.4		ug/L		88	70 - 130	

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Client: Haley & Aldrich, Inc.

**Analysis Batch: 517466** 

Project/Site: Annual Outfall 008 Comp

Lab Sample ID: 440-226830-1 MS

Method: 200.8 - Metals (ICP/MS) (Continued)

Sample Sample

ND

Result Qualifier

Client Sample ID: Outfall008_20181207_Comp **Prep Type: Total Recoverable** 

**Prep Batch: 517388** %Rec.

Result Qualifier Unit %Rec Limits 90 70 - 130 ug/L

Lab Sample ID: 440-226830-1 MSD

Client Sample ID: Outfall008_20181207_Comp **Prep Type: Total Recoverable** 

80.0

Spike

Added

**Matrix: Water** 

**Matrix: Water** 

Analyte

Thallium

**Analysis Batch: 517466** Prep Batch: 517388

MS MS

72.0

_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	79.8	-	ug/L		100	70 - 130	0	20
Cadmium	0.90	J,DX	80.0	80.0		ug/L		99	70 - 130	1	20
Copper	15		80.0	88.8		ug/L		93	70 - 130	1	20
Lead	54		80.0	125		ug/L		89	70 - 130	3	20
Antimony	0.86	J,DX	80.0	74.2		ug/L		92	70 - 130	8	20
Selenium	2.1		80.0	74.1		ug/L		90	70 - 130	2	20
Thallium	ND		80.0	68.5		ug/L		86	70 - 130	5	20

Lab Sample ID: MB 440-516386/1-C

**Matrix: Water** 

**Analysis Batch: 517749** 

**Client Sample ID: Method Blank Prep Type: Dissolved** 

**Prep Batch: 517585** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 12/17/18 11:52 12/17/18 21:09 Silver  $\overline{\mathsf{ND}}$ 1.0 0.50 ug/L Cadmium ND 1.0 0.25 ug/L 12/17/18 11:52 12/17/18 21:09 12/17/18 11:52 12/17/18 21:09 Copper ND 2.0 0.50 ug/L Lead ND 1.0 0.50 ug/L 12/17/18 11:52 12/17/18 21:09 ND 2.0 0.50 ug/L 12/17/18 11:52 12/17/18 21:09 Antimony Selenium ND 2.0 0.50 ug/L 12/17/18 11:52 12/17/18 21:09 ND Thallium 1.0 0.50 ug/L 12/17/18 11:52 12/17/18 21:09

Lab Sample ID: LCS 440-516386/2-C

**Matrix: Water** 

Analysis Batch: 517749

**Client Sample ID: Lab Control Sample Prep Type: Dissolved** 

**Prep Batch: 517585** 

Analysis Baton. 017740	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Silver	80.0	79.3		ug/L		99	85 - 115
Cadmium	80.0	79.4		ug/L		99	85 - 115
Copper	80.0	80.3		ug/L		100	85 - 115
Lead	80.0	80.2		ug/L		100	85 - 115
Antimony	80.0	92.2		ug/L		115	85 - 115
Selenium	80.0	79.4		ug/L		99	85 - 115
Thallium	80.0	79.6		ua/l		99	85 - 115

Lab Sample ID: 440-226830-2 MS

**Matrix: Water** 

**Analysis Batch: 517749** 

Client Sample ID: Outfall008_20181207_Comp_F **Prep Type: Dissolved Prep Batch: 517585** 

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	ND		80.0	77.2		ug/L		97	70 - 130	
Cadmium	ND		80.0	77.4		ug/L		97	70 - 130	
Copper	1.5	J,DX	80.0	80.0		ug/L		98	70 - 130	

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-226830-2 MS Client Sample ID: Outfall008_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

**Analysis Batch: 517749 Prep Batch: 517585** MS MS Sample Sample Spike %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Lead ND 80.0 82.1 ug/L 103 70 - 130 Antimony 0.79 J,DX 80.0 92.0 ug/L 114 70 - 130

Selenium 0.87 J,DX 80.0 73.0 ug/L 90 70 - 130 Thallium ND 80.0 81.6 ug/L 102 70 - 130

Lab Sample ID: 440-226830-2 MSD Client Sample ID: Outfall008_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

ND

Analysis Batch: 517749									Prep Ba	itch: 51	17585
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	78.6		ug/L		98	70 - 130	2	20
Cadmium	ND		80.0	78.1		ug/L		98	70 - 130	1	20
Copper	1.5	J,DX	80.0	82.3		ug/L		101	70 - 130	3	20
Lead	ND		80.0	82.2		ug/L		103	70 - 130	0	20
Antimony	0.79	J,DX	80.0	93.2		ug/L		116	70 - 130	1	20
Selenium	0.87	J,DX	80.0	73.6		ug/L		91	70 - 130	1	20
Thallium	ND		80.0	81.4		ug/L		102	70 - 130	0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-517745/1-A Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Mercury

**Analysis Batch: 518005** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.20 <u>12/18/18 11:03</u> <u>12/18/18 15:18</u> Mercury  $\overline{\mathsf{ND}}$ 0.10 ug/L

Lab Sample ID: LCS 440-517745/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518005 **Prep Batch: 517745** LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits Mercury 8.00 7.56 ug/L 85 - 115

Lab Sample ID: 440-227587-A-19-B MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 518005** Prep Batch: 517745 Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits

8.00

Lab Sample ID: 440-227587-A-19-C MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518005** Prep Batch: 517745

7.52

ug/L

94

75 - 125

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier D %Rec Limits RPD Limit **Analyte** Unit ND 8.00 7.40 93 75 - 125 2 Mercury ug/L

TestAmerica Irvine

12/28/2018

Prep Batch: 517745

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

# Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-516386/1-B Client Sample ID: Method Blank

**Matrix: Water Prep Type: Dissolved Analysis Batch: 517219 Prep Batch: 516709** 

MB MB

Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac **Prepared** 0.20 <u>12/12/18 21:39</u> <u>12/13/18 21:26</u> ND 0.10 ug/L Mercury

Lab Sample ID: LCS 440-516386/2-B Client Sample ID: Lab Control Sample **Matrix: Water Prep Type: Dissolved Analysis Batch: 517219 Prep Batch: 516709** 

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec

85 - 115 Mercury 8.00 7.89 ug/L 99

Lab Sample ID: 440-226830-2 MS Client Sample ID: Outfall008_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

**Analysis Batch: 517219 Prep Batch: 516709** Sample Sample Spike MS MS %Rec.

Result Qualifier Added Result Qualifier Limits Analyte Unit D %Rec Mercury ND 8.00 8.02 ug/L 100 75 - 125

Client Sample ID: Outfall008_20181207_Comp_F Lab Sample ID: 440-226830-2 MSD **Prep Type: Dissolved** 

**Matrix: Water** 

**Analysis Batch: 517219 Prep Batch: 516709** Sample Sample Spike MSD MSD %Rec.

**RPD** Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Mercury  $\overline{\mathsf{ND}}$ 8.00 7.98 100 75 - 125 ug/L

#### Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-516331/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 516331** 

MB MB Result Qualifier RL **MDL** Unit Dil Fac Analyte Prepared Analyzed 10 Total Dissolved Solids 12/11/18 14:10  $\overline{\mathsf{ND}}$ 5.0 mg/L

Lab Sample ID: LCS 440-516331/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 516331

Spike LCS LCS %Rec. Result Qualifier Added Analyte Unit %Rec Limits

**Total Dissolved Solids** 1000 978 mg/L 98 90 - 110

Lab Sample ID: 440-226959-Y-1 DU **Client Sample ID: Duplicate Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 516331** 

Sample Sample DU DU **RPD** Analyte Result Qualifier Result Qualifier Unit D **RPD** Limit **Total Dissolved Solids** 300 289 mg/L

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

# Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-517087/1 Client Sample ID: Method Blank **Prep Type: Total/NA Matrix: Water** 

**Analysis Batch: 517087** 

MB MB Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac Prepared 1.0 Total Suspended Solids ND 0.50 mg/L 12/14/18 08:46

Lab Sample ID: LCS 440-517087/2 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 517087** 

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec **Total Suspended Solids** 1000 1050 mg/L 105 85 - 115

Lab Sample ID: 440-226830-1 DU Client Sample ID: Outfall008_20181207_Comp **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 517087** 

Sample Sample DU DU **RPD** Result Qualifier Result Qualifier RPD Limit Analyte Unit D **Total Suspended Solids** 750 815 mg/L

#### Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-518050/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA **Prep Batch: 518050** 

**Analysis Batch: 518292** 

MR MR

Result Qualifier RL **MDL** Unit Analyte Prepared Analyzed Cyanide, Total ND 5.0 2.5 ua/L 12/18/18 23:42 12/19/18 23:45

Lab Sample ID: LCS 440-518050/2-A Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518292 Prep Batch: 518050** Spike LCS LCS %Rec.

Added Result Qualifier Unit %Rec Limits Analyte 100 Cyanide, Total 103 ug/L 103 90 - 110

Lab Sample ID: 440-227587-A-38-B MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518292 Prep Batch: 518050** Spike MS MS %Rec. Sample Sample

Added Analyte Result Qualifier Result Qualifier Unit %Rec Limits Cyanide, Total 100 ND 84.9 ug/L 85 70 - 115

Lab Sample ID: 440-227587-A-38-C MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA **Analysis Batch: 518292 Prep Batch: 518050** Sample Sample Spike MSD MSD %Rec. **RPD** 

Added Analyte Result Qualifier Result Qualifier Unit D %Rec Limits RPD Limit Cyanide, Total ND 100 78.8 ug/L 79 70 - 115 8

# QC Sample Results

Client: Haley & Aldrich, Inc.

Analysis Batch: 518382

**Matrix: Water** 

Project/Site: Annual Outfall 008 Comp

Lab Sample ID: MB 440-518382/10

Method: SM 4500 NH3 G - Ammonia

TestAmerica Job ID: 440-226830-1

Client Sample ID: Method Blank

**Prep Type: Total/NA** 

MB MB

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.200 Ammonia (as N) ND 0.100 mg/L 12/19/18 13:43

Lab Sample ID: LCS 440-518382/11 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518382

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec Ammonia (as N) 5.00 4.890 mg/L 98 90 - 110

Lab Sample ID: MRL 440-518382/9 **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 518382** 

Spike MRL MRL %Rec. Added Result Qualifier Limits Analyte Unit D %Rec Ammonia (as N) 0.200 0.1610 J,DX mg/L 81 50 - 150

Lab Sample ID: 440-227448-K-1 MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

Analysis Batch: 518382

Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Unit %Rec Limits Ammonia (as N)  $\overline{\mathsf{ND}}$ 5.00 5.070 101 90 - 110 mg/L

Lab Sample ID: 440-227448-K-1 MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 518382** 

Spike MSD MSD %Rec. RPD Sample Sample Added Analyte Result Qualifier Result Qualifier Unit D %Rec Limits RPD Limit Ammonia (as N) ND 5.00 5.050 mg/L 101 90 - 110

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

#### **GC/MS Semi VOA**

#### **Prep Batch: 515842**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	625	
MB 440-515842/1-A	Method Blank	Total/NA	Water	625	
LCS 440-515842/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-515842/3-A	Lab Control Sample Dup	Total/NA	Water	625	

#### **Analysis Batch: 516279**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	625	515842
MB 440-515842/1-A	Method Blank	Total/NA	Water	625	515842
LCS 440-515842/2-A	Lab Control Sample	Total/NA	Water	625	515842
LCSD 440-515842/3-A	Lab Control Sample Dup	Total/NA	Water	625	515842

#### **GC Semi VOA**

#### **Analysis Batch: 516104**

<b>Lab Sample ID</b> 440-226830-1	Client Sample ID Outfall008_20181207_Comp	Prep Type Total/NA	Matrix Water	Method 608 Pesticides	Prep Batch 516165
MB 440-516165/1-A	Method Blank	Total/NA	Water	608 Pesticides	516165
LCS 440-516165/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	516165
LCSD 440-516165/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	516165

#### **Prep Batch: 516165**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	608	
MB 440-516165/1-A	Method Blank	Total/NA	Water	608	
LCS 440-516165/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-516165/4-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-516165/3-A	Lab Control Sample Dup	Total/NA	Water	608	
LCSD 440-516165/5-A	Lab Control Sample Dup	Total/NA	Water	608	

#### **Analysis Batch: 516373**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	608 PCB LL	516165
MB 440-516165/1-A	Method Blank	Total/NA	Water	608 PCB LL	516165
LCS 440-516165/4-A	Lab Control Sample	Total/NA	Water	608 PCB LL	516165
LCSD 440-516165/5-A	Lab Control Sample Dup	Total/NA	Water	608 PCB LL	516165

#### **HPLC/IC**

#### Analysis Batch: 515510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	218.6	<del>-</del>
MB 440-515510/6	Method Blank	Total/NA	Water	218.6	
LCS 440-515510/5	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-515510/4	Lab Control Sample	Total/NA	Water	218.6	
440-226746-C-1 MS	Matrix Spike	Total/NA	Water	218.6	
440-226746-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	218.6	

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

# **HPLC/IC (Continued)**

#### **Analysis Batch: 515570**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	300.0	
MB 440-515570/6	Method Blank	Total/NA	Water	300.0	
LCS 440-515570/5	Lab Control Sample	Total/NA	Water	300.0	
440-226786-H-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-226786-H-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

#### **Analysis Batch: 515571**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	300.0	
MB 440-515571/6	Method Blank	Total/NA	Water	300.0	
LCS 440-515571/5	Lab Control Sample	Total/NA	Water	300.0	
440-226786-H-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-226786-H-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

#### **Analysis Batch: 515889**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	314.0	
MB 440-515889/6	Method Blank	Total/NA	Water	314.0	
LCS 440-515889/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-515889/4	Lab Control Sample	Total/NA	Water	314.0	
720-90134-E-5 MS	Matrix Spike	Total/NA	Water	314.0	
720-90134-E-5 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

#### **Analysis Batch: 517959**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	NO3NO2 Calc	

#### **Metals**

#### Filtration Batch: 516386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	FILTRATION	-
MB 440-516386/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-516386/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-516386/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-516386/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-516386/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-516386/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	FILTRATION	
440-226830-2 MSD	Outfall008 20181207 Comp F	Dissolved	Water	FILTRATION	

#### **Prep Batch: 516709**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	245.1	516386
MB 440-516386/1-B	Method Blank	Dissolved	Water	245.1	516386
LCS 440-516386/2-B	Lab Control Sample	Dissolved	Water	245.1	516386
440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	245.1	516386
440-226830-2 MSD	Outfall008_20181207_Comp_F	Dissolved	Water	245.1	516386

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

# **Metals (Continued)**

#### Analysis Batch: 517011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	SM 2340B	

#### **Analysis Batch: 517219**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	245.1	516709
MB 440-516386/1-B	Method Blank	Dissolved	Water	245.1	516709
LCS 440-516386/2-B	Lab Control Sample	Dissolved	Water	245.1	516709
440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	245.1	516709
440-226830-2 MSD	Outfall008_20181207_Comp_F	Dissolved	Water	245.1	516709

#### **Prep Batch: 517388**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total Recoverable	Water	200.2	
MB 440-517388/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-517388/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-226830-1 MS	Outfall008_20181207_Comp	Total Recoverable	Water	200.2	
440-226830-1 MSD	Outfall008_20181207_Comp	Total Recoverable	Water	200.2	

#### **Prep Batch: 517392**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total Recoverable	Water	200.2	
MB 440-517392/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-517392/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-226830-1 MS	Outfall008_20181207_Comp	Total Recoverable	Water	200.2	
440-226830-1 MSD	Outfall008_20181207_Comp	Total Recoverable	Water	200.2	

#### **Analysis Batch: 517415**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total Recoverable	Water	SM 2340B	

#### **Analysis Batch: 517466**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total Recoverable	Water	200.8	517388
MB 440-517388/1-A	Method Blank	Total Recoverable	Water	200.8	517388
LCS 440-517388/2-A	Lab Control Sample	Total Recoverable	Water	200.8	517388
440-226830-1 MS	Outfall008_20181207_Comp	Total Recoverable	Water	200.8	517388
440-226830-1 MSD	Outfall008_20181207_Comp	Total Recoverable	Water	200.8	517388

#### **Prep Batch: 517585**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	200.2	516386
MB 440-516386/1-C	Method Blank	Dissolved	Water	200.2	516386
LCS 440-516386/2-C	Lab Control Sample	Dissolved	Water	200.2	516386
440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	200.2	516386
440-226830-2 MSD	Outfall008_20181207_Comp_F	Dissolved	Water	200.2	516386

#### Prep Batch: 517587

-					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	200.2	516386
MB 440-516386/1-D	Method Blank	Dissolved	Water	200.2	516386
LCS 440-516386/2-D	Lab Control Sample	Dissolved	Water	200.2	516386

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TestAmerica Job ID: 440-226830-1

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Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

# Metals (Continued)

#### Prep Batch: 517587 (Continued)

1	Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
	440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	200.2	516386
	440-226830-2 MSD	Outfall008_20181207_Comp_F	Dissolved	Water	200.2	516386

#### Prep Batch: 517745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	245.1	
MB 440-517745/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-517745/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-227587-A-19-B MS	Matrix Spike	Total/NA	Water	245.1	
440-227587-A-19-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

#### **Analysis Batch: 517749**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	200.8	517585
MB 440-516386/1-C	Method Blank	Dissolved	Water	200.8	517585
LCS 440-516386/2-C	Lab Control Sample	Dissolved	Water	200.8	517585
440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	200.8	517585
440-226830-2 MSD	Outfall008_20181207_Comp_F	Dissolved	Water	200.8	517585

#### **Analysis Batch: 517759**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-2	Outfall008_20181207_Comp_F	Dissolved	Water	200.7 Rev 4.4	517587
MB 440-516386/1-D	Method Blank	Dissolved	Water	200.7 Rev 4.4	517587
LCS 440-516386/2-D	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	517587
440-226830-2 MS	Outfall008_20181207_Comp_F	Dissolved	Water	200.7 Rev 4.4	517587
440-226830-2 MSD	Outfall008_20181207_Comp_F	Dissolved	Water	200.7 Rev 4.4	517587

#### **Analysis Batch: 518005**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	245.1	517745
MB 440-517745/1-A	Method Blank	Total/NA	Water	245.1	517745
LCS 440-517745/2-A	Lab Control Sample	Total/NA	Water	245.1	517745
440-227587-A-19-B MS	Matrix Spike	Total/NA	Water	245.1	517745
440-227587-A-19-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	517745

#### **Analysis Batch: 518714**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	517392
MB 440-517392/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	517392
LCS 440-517392/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	517392
440-226830-1 MS	Outfall008_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	517392
440-226830-1 MSD	Outfall008_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	517392

# **General Chemistry**

#### **Analysis Batch: 516331**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	SM 2540C	
MB 440-516331/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-516331/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

# **General Chemistry (Continued)**

#### **Analysis Batch: 516331 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226959-Y-1 DU	Duplicate	Total/NA	Water	SM 2540C	

#### **Analysis Batch: 517087**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	SM 2540D	
MB 440-517087/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-517087/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-226830-1 DU	Outfall008_20181207_Comp	Total/NA	Water	SM 2540D	

#### **Prep Batch: 518050**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	Distill/CN	
MB 440-518050/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-518050/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-227587-A-38-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-227587-A-38-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

#### **Analysis Batch: 518292**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	SM 4500 CN E	518050
MB 440-518050/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	518050
LCS 440-518050/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	518050
440-227587-A-38-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	518050
440-227587-A-38-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	518050

#### **Analysis Batch: 518382**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-518382/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-518382/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-518382/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-227448-K-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-227448-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

## **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-1

#### **Qualifiers**

#### **GC/MS Semi VOA**

Qualifier	Qua	ilitier L	)escr	iption		
					-	

Estimated value; value < lowest standard (MQL), but >than MDL JDX

#### HPLC/IC

Qualifier Qualifier Description
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Sample > 4X spike concentration BB

ΕY Result exceeds normal dynamic range; reported as a min. est. J,DX Estimated value; value < lowest standard (MQL), but >than MDL

#### **Metals**

Qualifier **Qualifier Description** 

J.DX Estimated value; value < lowest standard (MQL), but >than MDL

Sample > 4X spike concentration

#### **General Chemistry**

Qualifier **Qualifier Description** 

 $\overline{J.DX}$ Estimated value; value < lowest standard (MQL), but >than MDL

#### **Glossary**

#### Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery **CFL** Contains Free Liquid **CNF** Contains No Free Liquid

**DER** Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DΙ Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

**EDL** Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) Limit of Quantitation (DoD/DOE) LOQ

Minimum Detectable Activity (Radiochemistry) MDA MDC Minimum Detectable Concentration (Radiochemistry)

Method Detection Limit MDL MI Minimum Level (Dioxin)

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

**PQL Practical Quantitation Limit** 

QC **Quality Control** 

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

**TEF** Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226830-1

Project/Site: Annual Outfall 008 Comp

# **Laboratory: TestAmerica Irvine**

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program		EPA Region	<b>Identification Number</b>	Expiration Date	
California	State Prog	gram	9	CA ELAP 2706	06-30-19	
The following analyte	are included in this repor	rt, but the laboratory	is not certified by the	e governing authority. This	list may include analytes for whi	
The following analyte the agency does not o	•	rt, but the laboratory	is not certified by the	e governing authority. This	list may include analytes for whi	
the agency does not o	offer certification.	,	·		list may include analytes for whi	
• ,	•	rt, but the laboratory  Matrix	Analyt			

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Certificate of Analysis

**FINAL REPORT** 

Work Orders: 8L10022

12/26/2018 **Report Date:** 

12/8/2018 **Received Date:** 

1 workday **Turnaround Time:** 

> (949) 261-1022 **Phones:**

(949) 260-3297 Fax:

P.O. #:

**Billing Code:** 

Attn: Urvashi Patel

**Project:** 440-226830-1

Client: TestAmerica - Irvine CA

17461 Derian Ave, Suite 100

Irvine, CA 92614

Dear Urvashi Patel,

Enclosed are the results of analyses for samples received 12/08/18 with the Chain-of-Custody document. The samples were received in good condition, at 10.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

# Sample Results

Sample:	Outfall008_20181207_Comp	(440-226830-1)						Sampled: 12/07/18 11:0	5 by Client
	8L10022-01 (Water)								
Analyte			Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA	4 525.2M	Batch ID: W8L0670	Instr: GCMS13		Prepared: 1	12/11/18 09:01		Analyst: GCMS13	
Chlorpyrifo	os		ND	34	50	ng/l	1	12/18/18 20:13	M-02
Diazinon			ND	26	50	ng/l	1	12/18/18 20:13	M-02
Surrogate(s) 1,3-Dimet	hyl-2-nitrobenzene		74%		76-128	Conc: 18	860	12/18/18 20:13	M-02, S-GC
Triphenyl	phosphate		140%		40-163	Conc: 35	500	12/18/18 20:13	M-02

8L10022 Page 1 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634



# **Certificate of Analysis**

FINAL REPORT

	,		
<b>~</b>			<b>-</b>
(Jualit	v ( ;o	ntrol F	Results
Quant	,		1000110

/A (/A)											
Semivolatile Organics - Low Level by Tande	m GC/MS/MS										
					Spike	Source		%REC		RPD	
Analyte	Result	MDL	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifie
Blank (W8L0670-BLK1)				Р	repared: 12/11/	18 Analyzed: 1	12/18/18				
Chlorpyrifos	ND	6.9	10	ng/l							
Diazinon	ND	5.2	10	ng/l							
Surrogate(s)											
1,3-Dimethyl-2-nitrobenzene			439	ng/l	500		88	76-128			
Triphenyl phosphate			432	ng/l	500		86	40-163			
LCS (W8L0670-BS1)		Prepared: 12/11/18 Analyzed: 12/18/18									
Chlorpyrifos	52.0	6.9	10	ng/l	50.0		104	37-169			
Diazinon	47.1	5.2	10	ng/l	50.0		94	43-152			
Surrogate(s)											
, ,				ng/l	500		94	76-128			
Triphenyl phosphate			516	ng/l	500		103	40-163			
Matrix Spike (W8L0670-MS1)	Source: 8K28075-01		P	Prepared: 12/11/18 Analyzed: 12/18/18							
Chlorpyrifos	78.4	6.9	10	ng/l	50.0	ND	157	37-168			
Diazinon	67.6	5.2	10	ng/l	50.0	ND	135	36-153			
Surrogate(s)											
1,3-Dimethyl-2-nitrobenzene			437	ng/l	500		87	76-128			
Triphenyl phosphate			654	ng/l	500		131	40-163			
Matrix Spike Dup (W8L0670-MSD1)	Source	8K28075-0	01	Р	repared: 12/11/	18 Analyzed: 1	12/18/18				
Chlorpyrifos	60.7	6.9	10	ng/l	50.0	ND	121	37-168	26	30	
Diazinon	57.9	5.2	10	ng/l	50.0	ND	116	36-153	15	30	
Surrogate(s)											
1,3-Dimethyl-2-nitrobenzene			468	ng/l	500		94	76-128			
Triphenyl phosphate			493	ng/l	500		99	40-163			

8L10022 Page 2 of 3



# Certificate of Analysis

FINAL REPORT

# Notes and Definitions

iteiii	Definition					
M-02	Due to the nature of matrix interferences, sample was diluted prior to preparation. The MDL and MRL were raised due to the dilution.					
S-GC	Surrogate recovery outside of control limits due to a possible matrix effect . The data was accepted based on valid recovery of the remaining surrogate.					
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.					
Dil	Dilution					
dry	Sample results reported on a dry weight basis					
RPD	Relative Percent Difference					
% Rec	Percent Recovery					
Source	Sample that was matrix spiked or duplicated.					
MDL	Method Detection Limit					
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)					
MDA	Minimum Detectable Activity					
NR	Not Reportable					
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.					

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance. An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB) All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

#### Reviewed by:









Regina Giancola **Project Manager** 

> ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Page 3 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634



method hold time.

# LA Testing

520 Mission Street South Pasadena, CA 91030 Phone/Fax: (323) 254-9960 / (323) 254-9982 http://www.LATesting.com / pasadenalab@latesting.com LA Testing Order ID: 321828614 TEST72 Customer ID:

Customer PO:

Project ID:

Attn: Urvashi Patel

> TestAmerica - Irvine, CA 17461 Derian Avenue Suite 100

Phone: (949) 261-1022 Fax: (949) 260-3297 Received: 12/11/2018 Analyzed: 12/16/2018

Irvine, CA 92614

Annual Outfall 008 Comp | Project #44009879 | Job #440-226830-1 Proj:

# Test Report: Determination of Asbestos Structures ≥ 0.5 µm & > 10µm in Water Performed by the 100.2 Method (EPA 600/R-94/134)

**ASBESTOS** Original **Effective** Sample Asbestos Confidence Fibers Analytical Concentration Sample Vol. Filter Area Sample ID Filtration Types Detected Sensitivity Limits Client / EMSL Date/Time Filtered Area Analyzed (mm²) (mm²) (ml) MFL (million fibers per liter) Outfall008 2018120 1288 0.2580 ≥ 0.5 None Detected ND 5.00 <5.00 0.00 - 18.00 12/12/2018 μm 7 Comp 12:25 PM (440-226830-1) 321828614-0001 > 10 0.00 - 18.00 Collection Date/Time: 12/07/2018 11:05 None Detected ND 5.00 <5.00 um only Sample ozonated prior to analysis due to lab receipt time exceeding 48hr

Analyst(s) Sherrie Ahmad (1)

> Jerry Drapala Ph.D, Laboratory Manager or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 12/16/2018 15:28:34

Sample collection and containers provided by the client, acceptable bottle blank level is defined as ≤0.01MFL>10um. ND=None Detected. This report relates only to those items tested. This report may not be reproduced, except in full, without written permission by LA Testing. Samples received in good condition unless otherwise noted

Samples analyzed by LA Testing South Pasadena, CA CA ELAP 2283



December 27, 2018

Ms. Urvashi Patel TestAmerica Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT:

TestAmerica Irvine

SAMPLE I.D.:

Outfall008 20181207 Comp (440-226830-1)

DATE RECEIVED:

7 Dec - 18

ABC LAB. NO.:

TAM1218.058

### CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

#### TST RESULT

*GROWTH = PASS

% EFFECT = -28.28 %

Yours very truly,

Scott Johnson

Laboratory Director

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26 Dec-18 12:20 (p 1 of 1)

							Test	Code:	TAM12	18.058   1	2 <b>-</b> 5125-6487
Selenastrum	Growth Test							Aquatic Bi	ioassay & C	onsulting	Labs, Inc.
Batch ID:	09-7827-3967	Test	Type: Ce	ell Growth			Analy	/st:			
Start Date:	07 Dec-18 17:21	Proto	ocol: EF	A/821/R-02-0	013 (2002)		Dilue	nt: Labo	oratory Wate	r	
Ending Date:	11 Dec-18 15:35	Spec	ies: Se	lenastrum ca	pricornutum	l	Brine	: Not	Applicable		
Duration:	94h	Sour	ce: Ac	juatic Biosyst	ems, CO		Age:				
Sample ID:	04-8949-4250	Code	e: TA	M1218.058			Clien	t: Test	America Irv	ine	
Sample Date:	07 Dec-18 11:05	Mate	rial: Sa	ımple Water			Proje	ct: Boei	ng-SSFL NF	PDES	
Receipt Date:	07 Dec-18 16:50	Sour	ce: Bid	oassay Repoi	rt						
Sample Age:	6h (2 °C)	Stati	on: O	utfall008_201	81207_Com	p (440-2268	330-				
Single Compa	arison Summary										
Analysis ID	Endpoint		Compari	son Method			P-Value	Comparis	on Result		
19-8177-2277	Cell Density		TST-Wel	ch's t Test			2.1E-07	100% pas	sed cell den	sity	
Test Accepta	bility					TAC L	imits				
Analysis ID	Endpoint		Attribute		Test Stat	Lower	Upper	Overlap	Decision		
19-8177-2277	Cell Density		Control C	CV C	0.06625	<<	0.2	Yes	Passes Cr	iteria	
19-8177-2277	Cell Density		Control F	Resp	1.15E+6	1000000	>>	Yes	Passes Cr	iteria	
Cell Density	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.148E+6	1.085E+6	1.212E+6	1.044E+6	1.253E+6	2.690E+4	7.608E+4	6.62%	0.00%
100		8	1.473E+6	6 1.371E+6	1.575E+6	1.271E+6	1.626E+6	4.304E+4	1.217E+5	8.26%	-28.28%
Cell Density I	Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
0	N	1.162E+6	1.252E+6	3 1.165E+6	1.253E+6	1.044E+6	1.075E+6	1.106E+6	1.131E+6		
100		1.436E+6	1.371E+6	3 1.626E+6	1.606E+6	1.271E+6	1.438E+6	1.567E+6	1.471E+6		

26 Dec-18 12:20 (p 1 of 2)

							Test	Code:	TAM121	18.058   12	2-5125-6487
Selenastrum Grov	vth Test							Aquatic Bi	oassay & C	onsulting	Labs, Inc.
Analysis ID: 19-	8177-2277	Endpoir	nt: Cell	Density			CETI	S Version:	CETISv1.9	9.2	
Analyzed: 26	Dec-18 12:19	9 Analysis	s: Para	metric Bioe	quivalence-	Two Sample	e Offic	al Results:	Yes		
Batch ID: 09-7	7827-3967	Test Typ	e: Cell	Growth			Analy	st:			
Start Date: 07	Dec-18 17:21	Protoco	I: EPA	/821/R-02-0	13 (2002)		Dilue	nt: Labo	ratory Wate	r	
Ending Date: 11 [	Dec-18 15:35	Species	: Sele	nastrum ca	pricornutum		Brine	: Not A	pplicable		
Duration: 94h		Source:	Aqu	atic Biosyste	ems, CO		Age:				
Sample ID: 04-8	3949-4250	Code:	TAN	11218.058			Clien	t: Test	America Irvi	ine	
Sample Date: 07 [				iple Water			Proje	ct: Boeir	ng-SSFL NP	PDES	
Receipt Date: 07 I		Source:	Bioa	issay Repor	t						
Sample Age: 6h (	(2 °C)	Station:	Outf	all008_2018	31207_Com	p (440-2268	30-				
Data Transform		Alt Hyp			TST_b		Comparis	on Result			
Untransformed		C*b < T			0.75		100% pas	sed cell dens	sity		
TST-Welch's t Tes	st										
Control vs	Control II	Te	st Stat	Critical	DF	P-Type	P-Value	Decision(	x:25%)		
Negative Control	100*	12	87	0.7027	9	CDF	2.1E-07	Non-Signifi	cant Effect		
Test Acceptability	/ Criteria	TAC Limit	s								
Attribute	Test Stat		per	Overlap	Decision						
Control CV	0.06625	<< 0.2	2	Yes	Passes Cr	iteria					
Control Resp	1.15E+6	1000000 >>	•	Yes	Passes Cr	iteria					
ANOVA Table											3
Source	Sum Squa	ares Mo	ean Squ	are	DF	F Stat	P-Value	Decision(	a:5%)		
Between	4.219E+11	4.2	219E+11		1	40.94	1.7E-05	Significant	Effect		
Error	1.443E+11	1.0	030E+10	1	14	- 1					
Total	5.661E+11				15						
Distributional Tes	sts										
Attribute	Test			=	Test Stat	Critical	P-Value	Decision(	x:1%)		
Variances	Levene Eq	uality of Varian	ce Test		1.586	8.862	0.2285	Equal Vari	ances		
Variances	Mod Lever	ne Equality of V	ariance ⁻	Гest	1.417	8.862	0.2537	Equal Vari	ances		
Variances	Variance F	Ratio F Test			2.56	8.885	0.2381	Equal Vari	ances		
Distribution	Anderson-	Darling A2 Norr	mality Te	st	0.3345	3.878	0.5157	Normal Dis	stribution		
Distribution	D'Agostino	Skewness Tes	st		0.3139	2.576	0.7536	Normal Dis			
Distribution	-	ov-Smirnov D To			0.143	0.2471	0.5440	Normal Dis	stribution		
Distribution	Shapiro-W	ilk W Normality	Test		0.9607	0.8408	0.6754	Normal Dis	stribution		
Cell Density Sum	mary										
Conc-%	Code		ean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N		148E+6		1.212E+6	1.146E+6	1.044E+6	1.253E+6		6.62%	0.00%
100		8 1.	473E+6	1.371E+6	1.575E+6	1.454E+6	1.271E+6	1.626E+6	4.304E+4	8.26%	-28.28%
Cell Density Deta	il										

Analyst: QA: P

Rep 5

1.162E+6 1.252E+6 1.165E+6 1:253E+6 1.044E+6 1.075E+6 1.106E+6 1.131E+6

1.436E+6 1.371E+6 1.626E+6 1.606E+6 1.271E+6 1.438E+6 1.567E+6 1.471E+6

Rep 6

Rep 7

Rep 8

Rep 4

Conc-%

0

100

Code

Ν

Rep 1

Rep 2

Rep 3

Report Date: Test Code: 26 Dec-18 12:20 (p 2 of 2)

TAM1218.058 | 12-5125-6487

Selenastrum Growth Test

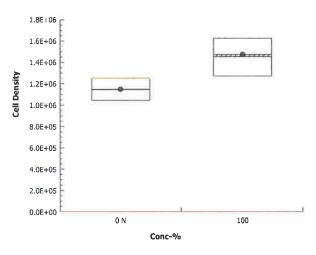
Aquatic Bioassay & Consulting Labs, Inc.

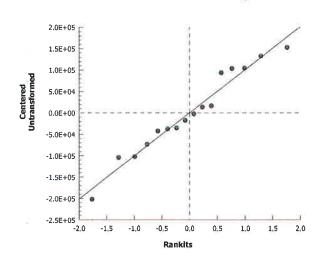
Analysis ID: 19-8177-2277 Endpoint: Cell Density

Analyzed: 26 Dec-18 12:19 Analysis: Parametric Bioequivalence-Two Sample

Official Results: Yes

Graphics





26 Dec-18 12:20 (p 1 of 2)

Test Code:

TAM1218.058 | 12-5125-6487

								1001 0000.	17 ((V)	210.000   1	2-3123-0407
Selenastrum	Growth Test							Aqua	tic Bioassay &	Consulting	g Labs, Inc.
Batch ID: Start Date: Ending Date: Duration:	09-7827-3967 07 Dec-18 17:2 11 Dec-18 15:3 94h	21 P 35 S	est Type: rotocol: pecies: ource:	Cell Growth EPA/821/R-02- Selenastrum c Aquatic Biosys	apricornutur	n		Analyst: Diluent: Brine: Age:	Laboratory Wa Not Applicable	ter	
•	04-8949-4250 07 Dec-18 11:0 07 Dec-18 16:8 6h (2 °C)	05 <b>N</b> 50 <b>S</b>	ode: //aterial: Source: Station:	TAM1218.058 Sample Water Bioassay Repo Outfall008_201		np (440-	226830-	Client: Project:	Test America I Boeing-SSFL N		
Alkalinity (Ca	CO3)-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	78			78	78	0	0	0.0%	0
Overall		2	73	9.469	136.5	68	78	5	7.071	9.69%	0 (0%)
Conductivity-	·µmhos										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	447.2	402.7	491.7	420	493	16.01	35.8	8.01%	0
100		5	260.2	136.9	383.5	187	370	44.42	99.32	38.17%	0
Overall		10	353.7	267.1	440.3	187	493	38.3	121.1	34.24%	0 (0%)
Hardness (Ca	CO3)-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	1	110			110	110	0	0	0.0%	0
100		1	103			103	103	0	0	0.0%	0
Overall		2	106.5	62.03	151	103	110	3.5	4.95	4.65%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	7.56	7.393	7.727	7.4	7.7	0.06	0.1342	1.78%	0
100		5	7.8	7.624	7.976	7.6	7.9	0.063	24 0.1414	1.81%	0
Overall		10	7.68	7.55	7.81	7.4	7.9	0.057	35 0.1814	2.36%	0 (0%)
Temperature-	-°C										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	25.04	24.83	25.25	24.8	25.2	0.074	84 0.1673	0.67%	0
100		5	25.04	24.83	25.25	24.8	25.2	0.074	84 0.1673	0.67%	0
Overall		10	25.04	24.93	25.15	24.8	25.2	0.049	89 0.1578	0.63%	0 (0%)

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### **CETIS Measurement Report**

Report Date:

26 Dec-18 12:20 (p 2 of 2)

Test Code:

TAM1218.058 | 12-5125-6487

Selenastrum (	Growth Test						Aquatic Bioassay & Consulting Labs, Inc.
Alkalinity (Ca	CO3)-mg/L						
Conc-%	Code	1					
0	N	68					
100		78					
Conductivity-	ımhos						
Conc-%	Code	1	2	3	4	5	
0	N	420	420	424	479	493	
100		188	187	188	370	368	
Hardness (Ca	CO3)-mg/L						
Conc-%	Code	1					
0	N	110					
100		103					
pH-Units							
Conc-%	Code	1	2	3	4	5	
0	N	7.4	7.5	7.5	7.7	7.7	
100		7.9	7.9	7.9	7.6	7.7	
Temperature-	,C						
Conc-%	Code	1	2	3	4	5	
0	N	25.2	25	25	24.8	25.2	
100		25.2	25	25	24.8	25.2	

Page 49 of 62

TestAmerica Irvine 17461 Derian Ave Suite 100















**Chain of Custody Record** 



Irvine, CA 92614-5817 Phone (949) 261-1022 Fax (949) 260-3297	`	, iidiii	J. J.				-				100000		*** *****	***						THE LEADER IN E	ATPROMISE	IL TESTING
Client Information (Sub Contract Lab)	Sampler:			Lab Pat		Jrvas	hi						Carr	nier Tra	scking	No(s)	:			COC No: 440-130579.1		
Client Contact:	Phone:			E-M			101-			laa a	2010			e of O						Page: Page 1 of 1		
Shipping/Receiving Company:	L			urv				Requi				_	Cal	HOITH	-					Job#:		
Aquatic Bioassay					Sta	ate P	rogr	am -	Califo	omia	ACC 1957								_	440-226830-1		
Address: 29 North Olive Street,	Due Date Request 12/19/2018	ted:								Ana	alysi	s Re	que	sted						Preservation Cod A - HCL	M - Hexane	
City: Ventura	TAT Requested (d	lays):			1300	250	Ę													B - NaOH C - Zn Acetate	N - None O - AsNaO2	
State, Zip: CA, 93001							nestr													D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O4S Q - Na2SO3 R - Na2S2O3	•
Phone:	PO#:				٦		Ic-Sel													G - Ametrior H - Ascorbic Acid	S - H2SO4 T - TSP Dode	
Email:	WO #:				S or N	(ON	Chron		1										,	I - Ice J - Dl Water	U - Acetone V - MCAA	
Project Name: Annual Outfall 008 Comp	Project #: 44009879				16 (Ye	O E O	etrum)												딅	K - EDTA L - EDA	W - pH 4-5 Z - other (spe	ecify)
Site:	SSOW#:				Samp	SD (Y	elene		İ										0.112	Other:		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C≃comp,	Matrix (www.star, S=solid, Oowrestelos, BT-Tissue, A-Nr	Field Filtered	Perform MS/M	SUB (Chronic-Selenestrum)/ Chronic-Selenestrum						-						Total Number of	Special In	structions/N	Note:
Gample Administration - Great to (Educa)			THE RESERVE AND ADDRESS OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE	ation Code:	X	X			W.		A 90	6 100				ME	JU-1-		X	0.7800.00	(a), 1 (a)(a)(1)	
Outfall008_20181207_Comp (440-226830-1)	12/7/18	11:05 Pacific	A SOLD DESCRIPTION	Water			х							I I I I					5			
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Note: Since laboratory accreditations are subject to change, TestAmerica Labora currently maintain accreditation in the State of Origin listed above for analysis/tes Laboratories, Inc. attention immediately. If all requested accreditations are curre	ts/matrix being analy	yzed, the samp	ntes must be s	hipped back to	the 1	TestAr	nerica	a labor	atory	or othe	ar instru	etions	es. Th will be	nis san provi	nple s ded.	hipmei Any ch	nt is fo	orward s to ac	ed ur credi	nder chain-of-custod italion status should	y. If the labora be brought to T	tory does no FestAmerica
Possible Hazard Identification						Sam	<del>-</del> -	•		•	e ma					-				d longer than 1		
Unconfirmed					_	<u> </u>		turn :		_			Dispo	sal E	y La	b		A	chiv	e For	Months	
Deliverable Requested: I, II, IV, Other (specify)	Primary Deliver	able Rank: 2	2		1	Spec	cial I	nstru	ctions	s/QC	Requ	ireme	ents:									
Empty Kit Relinquished by:		Date:			Tin	ne:	-	,	_					Meth	od of	Shipm	ent:					
Relinquished by:	Date/Time:			Company		F	Recei	ved by	V.	clo	2	m	eng	uso.	/	Date/	Time:	_ 2	1	8/1100	Company	MBS
Refinquished by:	Date/Time:		F. (F. (1) (1) (1)	Company		F	Recei	ved by	:				0	V		Date/	Time:				Company	
Relinquished by:	Date/Time:			Company		f	Recei	ved by								Date/	Time:				Company	FI.
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Ver: 09/20/2016

Test America

#### CHAIN OF CUSTODY FORM

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Page 50 of 62

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San Diego, C						Outfall [008]			ξ		ž I		- 1	Ę.	0.0 T (0				909	245	(E245.1)		100	
	a Contact: Urvashi Patel			1		tfall 008			> F		8			Сr, Fe, Ni, V, Zn, b, Sb, Se, П	65 69 80 80 80 80 80 80 80 80 80 80 80 80 80		1		m.	- W	*	mg	/1	- (01
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Agreement# 2015-	vices under this CoC shall be performed in accordance 18-TestAmerica by and between Haley & Aldrich, Inc.,	its subsidiaries and affiliates, and Te	estAmerica			-			As, B CaCC	8	() Ita	9	N25	S S S	900 First 000 000	20.0	20.	8	율	릁	₹			
Laboratories Inc.						, 520 904 694	<u> </u>		Al, A as C Ag, C	<u>a</u>	Z E	8	8	1, A	a(E 3) (F 8 (3)	ic Toxicity - Selenastrum 821-R-02-013)	ြင္နာ	2	Pollulants-Pesticides+PCBs (E608)	Ven	Dissolved			
Sampler: Da	n Smith			1	_	er: Mark Dor			0 4 8 4 A 8 4	ᇣ	이 원	ξ	202	sso (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS (): A SS	후 및 B 2 등	21-1	- E	00	<u>6</u>	8	iss			
				978,23	1000	, 818,599,070	)2 (cell)		rotal Recoverable Metals: E200.7); Al, As, B. Be, Cr, fardness as CaCO3 E200.8); Ag, Cd, Cu, Pb, S	Q	교 육	8	٥	Fotal Dissolved Metals: (E200.7): Al, As, B, Be, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, P	SS / um ubir nbir 137			piu	È	Total Recoverable Metals: Mercury (E245.1)	물			1
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Total Recc (E200.7): Hardness (E200.8):	TCDD (and all congeners)	Ch. F., SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchiorate (300)	TDS (SM2540C/E160.1)	TSS (160.2 (SM2540D))	Total Dissolved Me (E200.7): Al, As, B. Hardness as CaCC (E200.8): Ag, Cd, C	Gross Alpha(E900.0), Gross Beta(E900.0). Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chron (EPA-	Ammonia-N (350.2)	Cyanide (SM4500-CN-E / E335.2)	Priority	Tot	Total	_	4	
			WM	500 mL Poly	1	HNO ₃	85	No	Х							_			-	-	_			-
			WM	1 L Glass Amber	2	None	110	No		Х		_					$\vdash$				$\rightarrow$	-	+-	7 302
			WM	500 mL Poly	2	None	125	No			Х	_				_	$\square$		$\square$	Ш	$\rightarrow$	_		48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	-1	None	155	No		_		Х	_			_		_	-	-	$\rightarrow$	$\rightarrow$		
			WM	500 mL Poly	1	H2\$O4	160	No					_			_	X		-	-	$\rightarrow$	-+		
1			WM	1L Poly	- 15	None	185	No				_	Х			_	$\vdash$		-	-	$\rightarrow$	_	+	
1		,	WW	500 mL Poly	_ 1	NaOH	220	No								_		X	$\Box$	$\Box$		_	-	
	Outfall008_20181207_Comp	12/7/2018	WM	2.5 Gal Cube	1	None	225	No													$\Box$	_		Unfiltered and unpreserved analysis. Separate RAD onto
		1105	WM	1 L Glass Amber	1	None	230	No							х									another workorder. Analyze duplicate, not MS/MSD.
		85.7	WM	1 Gal Cube	1	None	235	No								х								Only test if first or second rain events of the year
Outfall 008			WM	1 L Glass Amber	2	None	250	No											х					
			00101	I L Glass Allibei	-	TWOTE	250	140	7,10	_	$\vdash$	$\neg$	$\neg$			$\overline{}$				$\neg$			$\neg$	Employee Alexander
	<b>3</b>		wm	rborosilicate vials		111103	315	-No-	botty											×				Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
					-		-	_	30119	-	-	-+	-			_			-	$\overline{}$		_	_	Filter and preserve w/in 24hrs of
			WM	1L Poly	1.	None	195	No		_		_	_	Х		_	$\vdash$		-	$\perp$	$\dashv$	-	+-	receipt at lab
	Outfall008_20181207_Comp_F	12/7/2018	WM	borosilicate vials	1	None	320	No													_x			Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury
1		(not		DOI OGNICATE VIGID	`		SERV.																	Prep using clean procedures.
l 1			WM	1 L Glass Amber	2	None	110	No		н								_						Hold
	Outfall008_20181207_Comp_Extra	12/7/2018	WM	500 mL Polv	2'1	None	125	No			н													Hold
	Catamoso_Lore, Lor_Comp_Land	/11/03	WM	1 L Glass Amber	2	None	250	No											Н					Hold
			11			1		-		-														
							Legend	: R = Ro	utine, A = A	nnua	1													
Relinguished By	Date/Time:	C	ompany:				_			- No. 1						_			Tum-a	iround	time:	(Check)		
Treamagnimate by		/	100115027050		- 00	SV - 0 SV	10		1//	0 01		12	7	10	14:26	_			24 Ho	ur:		72 Hou	r:	10 Day:X
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Relinquished By	Date/Time:	/	ompany:	850			received	-1	. 0	Salle	A.11.155				1111	•			Com-	la Into	arite (	Check)		
/.	1. 10 1/11.1	12 7.18	-	11.577	,		1	1. 7	- 70	-	/-	17-	- /	-10	1051	ノ					grity. (	Jileur)		On less
1 10	WU WAGA	12.7.18	/	6.00			V	w	1	V		-		10	14:35 1650	_			Intact:					On Ice:
Reinquished By	Date/fime:	C	ompany:				Received	Ву	1	Pite/	Time:											6 month:		
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1							1											- 1	No Lo	wal IV/			ΔIII c	vel IV: X



#### CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE:

6 December - 2018

STANDARD TOXICANT: Cadmium Chloride

NOEC =

<10.00 ug/l

IC25 =

67.99 ug/l

IC50 =

>140.00 ug/l

Yours very truly,

Scott Johnson

Laboratory Director

07-4374-8636

06 Dec-18 13:04

Selenastrum Growth Test

Batch ID:

Start Date:

**Duration:** 

Report Date:

21 Dec-18 10:17 (p 1 of 1)

**Test Code:** SEL120618 | 20-7096-1293

Aqu	atic Bioassay & Consulting Labs, Inc.
Analyst:	Laboratori Metar
Diluent:	Laboratory Water
Brine:	Not Applicable
Age:	
Client:	Internal Lab
Project:	

Sample ID: 00-9351-0249 Sample Date: 06 Dec-18 13:04

Ending Date: 10 Dec-18 12:30

95h

Code: Material:

Protocol:

Species:

Source:

Test Type: Cell Growth

Aquatic Biosystems, CO SEL120618

EPA/821/R-02-013 (2002)

Selenastrum capricornutum

Receipt Date: Sample Age: n/a

Source: Station: Cadmium chloride Reference Toxicant **REF TOX** 

**Multiple Comparison Summary** 

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD √
04-1574-4117	Cell Density	Dunnett Multiple Comparison Test	< 10	10	n/a		8.16%

**Point Estimate Summary** 

Analysis ID	Endpoint	Point Estimate Method	Level	μg/L	95% LCL	95% UCL	TU	✓
10-0218-2093	Cell Density	Linear Interpolation (ICPIN)	IC5	3.223	1.965	6.094		
			IC10	6.446	3.93	12.18		
			IC15	9.669	5.896	44.85		
			IC20	24.73	0.7599	80.82		
			IC25	67.99	n/a	152.4		
			IC40	>140	n/a	n/a		
			IC50	>140	n/a	n/a		

Test Accepta	bility			TAC Li	mits		
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
04-1574-4117	Cell Density	Control CV	0.06678	<<	0.2	Yes	Passes Criteria
10-0218-2093	Cell Density	Control CV	0.06678	<<	0.2	Yes	Passes Criteria
04-1574-4117	Cell Density	Control Resp	1.35E+6	1000000	>>	Yes	Passes Criteria
10-0218-2093	Cell Density	Control Resp	1.35E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary	ensity Summary
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Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.347E+6	1.204E+6	1.490E+6	1.286E+6	1.477E+6	4.499E+4	8.997E+4	6.68%	0.00%
10		4	1.138E+6	1.059E+6	1.218E+6	1.109E+6	1.213E+6	2.498E+4	4.997E+4	4.39%	15.51%
20		4	1.083E+6	9.123E+5	1:254E+6	1.004E+6	1.237E+6	5.363E+4	1.073E+5	9.90%	19.61%
40		4	1.061E+6	1.012E+6	1.110E+6	1.027E+6	1.102E+6	1.555E+4	3.110E+4	2.93%	21.25%
80		4	9.888E+5	9.420E+5	1.036E+6	9.510E+5	1.022E+6	1.469E+4	2.939E+4	2.97%	26.61%
140		4	9.428E+5	8.897E+5	9.958E+5	8.980E+5	9.770E+5	1.666E+4	3.331E+4	3.53%	30.02%

#### **Cell Density Detail**

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5

21 Dec-18 10:17 (p 1 of 2)

CETIS Ana	llytical Repo	rt					•	ort Date: Code:		21 Dec-18 10:17 (p 1 of 2) SEL120618   20-7096-1293	
Selenastrum (	Growth Test										ng Labs, Inc.
Analysis ID: Analyzed:	04-1574-4117 21 Dec-18 10:1			II Density rametric-Cor	ntrol vs Treat	ments		S Versionial Resul		1.9.2	
Batch ID:	07-4374-8636	Test	Type: Ce	II Growth			Anal	yst:			
Start Date:	06 Dec-18 13:04	Prote	ocol: EP	A/821/R-02-	013 (2002)		Dilue	ent: La	aboratory Wa	ter	
Ending Date: 10 Dec-18 12:30 Species: Selenastrum o					pricornutum		Brine	e: N	ot Applicable		
Duration: 95h Source: Aquatic Biosyst					ems, CO		Age:				
Sample ID:	00-9351-0249	Code	e: SE	L120618			Clier	nt: 1n	ternal Lab		
Sample Date: 06 Dec-18 13:04 Material: Cadmium chlor					ide		Proje	ect:			
Receipt Date:		Sour	ce: Re	ference Toxi	cant						
Sample Age:	n/a	Stati	on: RE	FTOX							
Data Transfor	·m	Alt Hyp					NOEL	LOEL	TOEL	TU	PMSD
Untransformed	d	C > T					< 10	10	n/a		8.16%
Dunnett Multi	ple Comparison	Test			9.						
Control	vs Control II		Test Stat	Critical	MSD DF	P-Type	P-Value	Decisio	n(α:5%)		
Negative Cont	rol 10*		4.576	2.407	1E+05 6	CDF	5.5E-04	Significa	ant Effect		
	20*		5.785	2.407	1E+05 6	CDF	6.6E-05	Significa	ant Effect		
	40*		6.267	2.407	1E+05 6	CDF	4.1E-05	Signification	ant Effect		
	80*		7.849	2.407	1E+05 6	CDF	2.8E-05	Signific	ant Effect		
	140*		8.856	2.407	1E+05 6	CDF	2.7E-05	Signific	ant Effect		
Test Acceptal	bility Criteria	TAC Li	mits								
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control CV	0.06678	<<	0.2	Yes	Passes Cr	iteria					
Control Resp	1.35E+6	1000000	>>	Yes	Passes Cr	riteria					
ANOVA Table											
Source	Sum Squa	ires	Mean Sq	uare	DF	F Stat	P-Value	Decisio	on(α:5%)		
Between	4.050E+11		8.101E+1	0	5	19.41	1.1E-06	Signific	ant Effect		
Error	7.511E+10	)	4.173E+0	9	18	_					
Total	4.801E+11				23				411		
Distributional	l Tests				18						
Attribute	Tost				Toet Stat	Critical	B-Value	Dooisis	n/a:19/\		

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	8.494	15.09	0.1310	Equal Variances
Variances	Levene Equality of Variance Test	1.861	4.248	0.1516	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.8958	4.248	0.5047	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.8885	3.878	0.0231	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.662	2.576	0.0964	Normal Distribution
Distribution	D'Agostino Skewness Test	2.496	2.576	0.0126	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	8.992	9.21	0.0112	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1651	0.2056	0.0895	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.8988	0.884	0.0203	Normal Distribution

#### **Cell Density Summary**

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.347E+6	1.204E+6	1.490E+6	1.313E+6	1.286E+6	1.477E+6	4.499E+4	6.68%	0.00%
10		4	1.138E+6	1.059E+6	1.218E+6	1.116E+6	1.109E+6	1.213E+6	2.498E+4	4.39%	15.51%
20		4	1.083E+6	9.123E+5	1.254E+6	1.046E+6	1.004E+6	1.237E+6	5.363E+4	9.90%	19.61%
40		4	1.061E+6	1.012E+6	1.110E+6	1.058E+6	1.027E+6	1.102E+6	1.555E+4	2.93%	21.25%
80		4	9.888E+5	9.420E+5	1.036E+6	9.910E+5	9.510E+5	1.022E+6	1.469E+4	2.97%	26.61%
140		4	9.428E+5	8.897E+5	9.958E+5	9.480E+5	8.980E+5	9.770E+5	1.666E+4	3.53%	30.02%

Analyst: QA:

000-189-126-0

CETIS™ v1.9.2.6

21 Dec-18 10:17 (p 2 of 2)

**Test Code:** 

SEL120618 | 20-7096-1293

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-1574-4117 Analyzed: 21 Dec-18 10:15

Selenastrum Growth Test

Parametric-Control vs Treatments Analysis:

Endpoint: Cell Density

Official Results: Yes

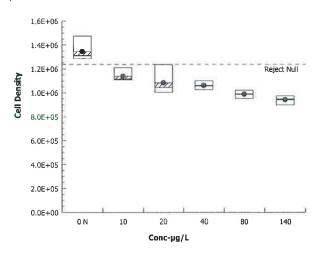
**CETIS Version:** CETISv1.9.2

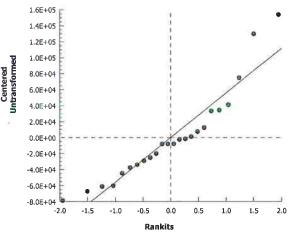
**Cell Density Detail** 

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6	
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6	
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6	
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6	
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5	
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5	

#### Graphics

000-189-126-0





21 Dec-18 10:17 (p 1 of 2)

Test Code:

SEL120618 | 20-7096-1293

Selenastrum	Growth Test					Aquatic Bioassay & Consulting Labs, Inc.					
Analysis ID: Analyzed:	10-0218-2093 21 Dec-18 10:1	Endpoint: 5 Analysis:	Cell Density Linear Interpola	ition (ICPIN)		CETIS Version: CETISv1.9.2 Official Results: Yes					
Batch ID: Start Date: Ending Date: Duration:	07-4374-8636 06 Dec-18 13:04 10 Dec-18 12:30 95h	Protocol:	Cell Growth EPA/821/R-02- Selenastrum ca Aquatic Biosyst	pricornutum			aboratory Water Not Applicable				
Sample ID: 00-9351-0249 Code: Sample Date: 06 Dec-18 13:04 Material: Receipt Date: Source: Sample Age: n/a Station:			SEL120618 Cadmium chlor Reference Toxi REF TOX			Client: I Project:	nternal Lab				
Linear Interpe	olation Options										
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method						
Linear	Linear	0	280	Yes	Two-Point	Interpolation					
Test Accepta	bility Criteria	TAC Limits									
Attribute	Test Stat	Lower Uppe	r Overlap	Decision							
Control CV	0.06678	<< 0.2	Yes	Passes Criteria							
Control Resp	1.35E+6	1000000 >>	Yes	Passes Criteria							
Point Estimat	tes										

Point Estimates
-----------------

Level	μg/L	95% LCL	95% UCL
IC5	3.223	1.965	6.094
IC10	6.446	3.93	12.18
IC15	9.669	5.896	44.85
IC20	24.73	0.7599	80.82
IC25	67.99	n/a	152.4
IC40	>140	n/a	n/a
IC50	>140	n/a	n/a

Cell Density Summary			Calculated Variate							
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	N	4	1.347E+6	1.286E+6	1.477E+6	4.499E+4	8.997E+4	6.68%	0.0%	
10		4	1.138E+6	1.109E+6	1.213E+6	2.498E+4	4.997E+4	4.39%	15.51%	
20		4	1.083E+6	1.004E+6	1.237E+6	5.363E+4	1.073E+5	9.90%	19.61%	
40		4	1.061E+6	1.027E+6	1.102E+6	1.555E+4	3.110E+4	2.93%	21.25%	
80		4	9.888E+5	9.510E+5	1.022E+6	1.469E+4	2.939E+4	2.97%	26.61%	
140		4	9,428E+5	8.980E+5	9:770E+5	1.666E+4	3.331E+4	3.53%	30.02%	

#### Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5

21 Dec-18 10:17 (p 2 of 2)

Test Code:

SEL120618 | 20-7096-1293

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: Analyzed:

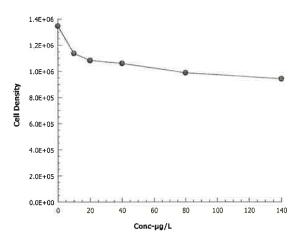
10-0218-2093 21 Dec-18 10:15 Endpoint: Cell Density

Analysis: Linear Interpolation (ICPIN) **CETIS Version:** 

CETISv1.9.2

Official Results: Yes

Graphics



000-189-126-0

21 Dec-18 10:17 (p 1 of 2)

Test Code:

SEL120618 | 20-7096-1293

Selenastrum Growth Test Aquatic Bioassay & Consulting Labs, Inc. Batch ID: 07-4374-8636 Test Type: Cell Growth Analyst: Start Date: 06 Dec-18 13:04 Protocol: EPA/821/R-02-013 (2002) Diluent: Laboratory Water Ending Date: 10 Dec-18 12:30 Species: Selenastrum capricornutum Brine: Not Applicable **Duration:** 95h Source: Aquatic Biosystems, CO Age: Sample ID: 00-9351-0249 Code: SEL120618 Client: Internal Lab Sample Date: 06 Dec-18 13:04 Material: Cadmium chloride Project: **Receipt Date:** Reference Toxicant Source: Sample Age: n/a Station: **REF TOX** Alkalinity (CaCO3)-mg/L Conc-µg/L Code Count Std Dev Mean 95% LCL 95% UCL Min Max Std Err CV% **QA** Count 0 N 1 68 68 68 0 0 0.0% 0 10 60 60 60 0 0 0.0% 0 20 61 61 61 0 0 0 1 0.0% 40 63 1 63 63 0 0 0.0% 0 80 1 56 56 56 0 0 0.0% 0 140 55 55 55 0 0 0.0% 0 Overall 60.5 55.5 65.5 55 68 1.945 4.764 7.88% 0 (0%) Conductivity-µmhos Conc-µg/L Code Mean 95% LCL 95% UCL CV% Count Min Max Std Err Std Dev **QA** Count 5 432 399.2 n 464.8 417 479 11.8 26.39 6.11% 0 10 5 440.6 434.4 428.2 430 443 2.249 5.03 1.16% 0 20 5 424.6 420.2 429 420 428 1.6 3.578 0.84% 0 40 5 410.2 403.7 416.7 405 419 2.354 5.263 1.28% 0 80 5 397 395.5 398.5 395 0.5477 398 1.225 0.31% 0 140 5 378.2 371.2 385.2 373 387 2.518 5.63 1.49% 0 Overall 30 412.7 404.2 421.3 373 479 4.197 22.99 5.57% 0 (0%) Hardness (CaCO3)-mg/L Code Conc-µg/L Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% **QA Count** 0 Ν 1 110 110 110 0 0 0.0% 0 10 1 108 108 108 0 0 0 0.0% 20 0 112 112 112 0 0.0% 0 40 116 116 116 0 0 0.0% 0 80 1 99 99 99 0 0 0.0% 0 140 1 96 96 96 0 0 0.0% 0 Overall 6 106.8 98.69 115 96 3.167 7.757 116 7.26% 0 (0%) pH-Units 95% UCL Conc-µg/L Code Count Mean 95% LCL Min Max Std Err Std Dev CV% **QA** Count Ν 5 7.52 7.384 7.656 7.4 7.7 0.04899 0.1095 1.46% 0 10 5 7.6 7.448 7.752 7.5 7.8 0.05477 0.1225 1.61% 0 20 5 7.62 7.516 7.724 7.5 7.7 0.03742 0.08367 1.1% 0 40 5 7.62 7.516 7.724 7.5 7.7 0.03742 0.08367 1.1% 0

000-189-126-0

80

140

Overall

5

5

30

7.64

7.6

7.6

7.498

7.476

7.562

7.782

7.724

7.638

7.5

7.5

7.4

7.8

7.7

7.8

0.05099

0.04472

0.01857

CETIS™ v1.9.2.6

Analyst:__

0.114

0.1017

0.1

1.49%

1.32%

1.34%

0

0

0 (0%)

Report Date: Test Code: 21 Dec-18 10:17 (p 2 of 2) SEL120618 | 20-7096-1293

Selenastrum	Growth Test			Aquatic Bioassay & Consulting Labs, Inc.							
Temperature-	·°C										
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
10		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
20		5	24.52	23.87	25.17	24	25.2	0.2332	0.5215	2.13%	0
40		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
80	25	5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
140		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
Overall		30	24.69	24.52	24.85	24	25.2	0.07947	0.4353	1.76%	0 (0%)

Alkalinity (CaC	O3)-mg/L				
Alkalinity (CaC Conc-µg/L	Code	_1			
0	N	68			
10		60			
20		61			
40		63			
80		56			
140		55		 	
Conductivity-u	ımhos				

Conductivity-µr	Conductivity-µmhos											
Conc-µg/L	Code	1	2	3	4	5						
0	N	417	420	420	424	479						
10		430	434	432	433	443						
20		420	422	425	428	428						
40		408	409	405	410	419						
80		395	397	398	397	398						
140		373	374	377	380	387						

40		408	409	405	410	419			
80		395	397	398	397	° 398			
140		373	374	377	380	387			
Hardness (CaC	CO3)-mg/L								
Conc-µg/L	Code	1							
0	N	110							
10		108							
20		112							
40		116							
80		99							

pH-Units           Conc-μg/L         Code         1           0         N         7.5           10         7.6         7.7           40         7.7	<b>2</b> 7.4 7.6	7.5 7.5	<b>4</b> 7.5 7.5	5 7.7	
0 N 7.5 10 7.6 20 7.7	7.4 7.6	7.5	7.5	7.7	
10 7.6 20 7.7	7.6				
20 7.7		7.5	7.5	7.0	
			1.0	7.8	
40 7,7	7.6	7.6	7.5	7.7	
	7.6	7.5	7.6	7.7	
80 7.7	7.6	7.5	7.6	7.8	
140 7.7	7.6	7.5	7.5	7.7	

Temperature-°C							
Conc-µg/L	Code	1	2	3	4	5	
0	N	24.6	25.2	24	25	24.8	
10		24.6	25.2	24	25	24.8	
20		24.6	25.2	24	24	24.8	
40		24.6	25.2	24	25	24.8	
80		24.6	25.2	24	25	24.8	
140		24.6	25.2	24	25	24.8	

#### CHAIN OF CUSTODY FORM

Page 1 of 2

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<u> </u>	vices under this CoC shall be performed in accordance	well the TECe within Blanket Sensor		Project	1 Mana	ar Katherin	a Millor		rable Me As, B, B, CaCO3 Cd, Cu,	ē	, Nitrate-N, Nitrite-N, (300)	喜	3	As, B. Be	96255	80	8	亨	4		물		1	
Agreements 2015	vices bridge that Coc shap be participated a successful to the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the con	te subsidianes and affiliates, and Te					520 289 8606, 520.904 6944 (cell)			8	5 €	#	文	Z 0 7	88 58 6	22	90	ည္ထိ	쉳	첉	₹		i	1
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Sample	A. (.18)	Samulas Data/Flore	Sample	Container Type	# of	Preservative	Bottle #	MS/MSD	Total F (E200 Hardin (E200	8	7.9	8	8	2 a 2 a 2	SE 5 3 6	£ 4	٤	Ē.	Ē	풍	.8	ŀ		
Description	Sample I.D.	Sampling Date/Time	Matrix	Container Type	Cont.	riescivanie	<u> </u>	<u> </u>		F	0 0	F	<u> </u>	Fere	0 F O K O	28	<u> </u>	-						
			WW	500 mil Poly	1	HNO ₃	85	No	×					<u> </u>										
1 1			WW	1 L Glass Amber	2	None	110	No		Х														
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0			WM	500 mL Poly	1	H2SO4	160	No			lacksquare						Х							
10 I		1	WM	1L Poty	1	None	185	No					Х										ᆜ—	
<b>b</b> 1			WM	500 mL Poly	1	NaOH	220	No	Ī			]						Х						
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Soutfail 008			WW	1 Gal Cube	1	None	235	No	<u> </u>															events of the year
D			WM	1 L Glass Amber	2	None	250	No											X					
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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-226830-1

Login Number: 226830 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, 11m		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Sacramento Sample Receiving Notes



Job:_

OD:_ 440-226

latea.	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / HA	ACCF	o / Ot	ner
Notes:	Ice	Othor		
		Otnei	-	-
	Cooler Custody Seal: Seal			
	Sample Custody Seal:			
				-
	Cooler ID:	,		
	Temp: Observed Corrected	1	0	
	From: Temp Blank D Sample	0		
	NCM Filed: Yes □ No			
	_			200
		Yes	No	NA
	Perchlorate has headspace?			Ø
	Alkalinity has no headspace?			Ø
	CoC is complete w/o discrepancies?	Ø		
		P		
	Sample preservatives verified?			Ď.
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with? Samples w/o discrepancies?	_	2	
	Sample containers have legible labels?	N N	ם	
	Containers are not broken or leaking?		0	0
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	Appropriate containers are used?	P		
	Sample bottles are completely filled?	Ø		
	Zero headspace?*	ם		Ø
	Multiphasic samples are not present?	ď		0
	Sample temp OK?	D D	D	ם
	Sample out of temp?	_	_	_

WZZR

#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226830-2

#### **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

14 January 2019





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- 2 Data Qualifier Reference
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#### INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226830-2

**Project Manager:** Katherine Miller

Matrix: Water
QC Level: IV

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20181207_ Comp	440-226830-1	N/A	Water	12/07/2018 11:05 AM	E1613B



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226830-2:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the original and transfer COCs.
- The transfer COC to TA-West Sacramento noted custody seals were present and intact on the cooler.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



#### **TABLE 3 - REASON CODE REFERENCE**

Reason	TABLE 3 - REASON CODE	
Code	Organic	Inorganic
Н	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
А	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. EPA METHOD 1613B — DIOXIN/FURANS

#### L. Calvin of MEC^x reviewed the SDG on January 14, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

#### **III.1. HOLDING TIMES**

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### **III.1. INSTRUMENT PERFORMANCE**

Instrument performance criteria were met. Following are findings associated with instrument performance:

#### III.1.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

#### III.1.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.2. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs  $\leq$ 20% for the 15 native compounds (calibration by isotope dilution) and  $\leq$ 35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, OCDD, and OCDF, and for totals TCDF, HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the RL were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The result above the RL for OCDD was <10× the method blank concentration, and was therefore qualified as a nondetect (U)



at the level of contamination. The reviewer verified that peaks comprising total HpCDF in the method blank were the same peaks comprising total HpCDF in sample Outfall008_20181207_Comp at similar concentrations. The result for total HpCDF was qualified as a nondetect (U) at the level of contamination. Results for totals HpCDD, HxCDD, HxCDF, and TCDF were qualified as estimated (J) as they contained one or more peaks not present in the method blank.

#### III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of ≤50%.

#### III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### 11.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### 11.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### III.5. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### **III.6. COMPOUND IDENTIFICATION**

Compound identification was verified. With the exception of estimated maximum possible concentrations (EMPCs), detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was detected in the initial analysis of the sample, and the detect was confirmed by second-column analysis. Both initial and confirmation analyses were reported. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the initial result was rejected (R) in favor of the confirmation result. The confirmation result was subsequently qualified as a nondetect for method blank contamination.

#### III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

Isomer 2,3,7,8-TCDD reported as an EMPC was qualified as an estimated nondetect (UJ) at the level of contamination. Totals HxCDD, PeCDD, PeCDF, TCDD, and TCDF contained both EMPC peaks and non-EMPC peaks, and were qualified as estimated (J).

## Validated Sample Result Forms: 4402268302

Analysis Method: E1613B

Sample Name Ou	tfall008_20181207_Com	ip	Matrix Type: W Result Type: TRG						
Lab Sample Name:	440-226830-1 Sample Date/Time:		12/07/2018 11:05		Validation Level: 8				
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code	
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.000030	0.00000037	0.000048	ug/L	J,DXMB	U	В	
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.0000081	0.00000032	0.000048	ug/L	J,DXMB	U	В	
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.0000039	0.00000029	0.000048	ug/L	J,DXMB	U	В	
1,2,3,4,7,8-HxCDD	39227-28-6	0.0000046	0.00000025	0.000048	ug/L	J,DXMB	U	В	
1,2,3,4,7,8-HxCDF	70648-26-9	0.0000040	0.00000030	0.000048	ug/L	J,DX	J	DNQ	
1,2,3,6,7,8-HxCDD	57653-85-7	0.0000038	0.00000023	0.000048	ug/L	J,DXMB	U	В	
1,2,3,6,7,8-HxCDF	57117-44-9	0.0000032	0.00000025	0.000048	ug/L	J,DXMB	U	В	
1,2,3,7,8,9-HxCDD	19408-74-3	0.0000053	0.00000022	0.000048	ug/L	J,DXMB	U	В	
1,2,3,7,8,9-HxCDF	72918-21-9	0.0000034	0.00000017	0.000048	ug/L	J,DXMB	U	В	
1,2,3,7,8-PeCDD	40321-76-4	0.0000028	0.00000026	0.000048	ug/L	J,DX	J	DNQ	
1,2,3,7,8-PeCDF	57117-41-6	0.0000027	0.00000021	0.000048	ug/L	J,DX	J	DNQ	
2,3,4,6,7,8-HxCDF	60851-34-5	0.0000031	0.00000017	0.000048	ug/L	J,DX	J	DNQ	
2,3,4,7,8-PeCDF	57117-31-4	0.0000028	0.00000026	0.000048	ug/L	J,DX	J	DNQ	
2,3,7,8-TCDD	1746-01-6	0.0000014	0.00000028	0.0000095	ug/L	J,DXq	UJ	*Ш	
2,3,7,8-TCDF	51207-31-9	0.0000019	0.00000061	0.0000095	ug/L	J,DXMB	U	В	
2,3,7,8-TCDF	51207-31-9	0.0000021	0.00000014	0.0000095	ug/L	J,DXMB	R	D	
OCDD	3268-87-9	0.00024	0.00000058	0.000095	ug/L	MB	U	В	
OCDF	39001-02-0	0.000021	0.00000035	0.000095	ug/L	J,DXMB	U	В	
Гotal HpCDD	37871-00-4	0.000069	0.00000037	0.000048	ug/L	MB	J	В	
Total HpCDF	38998-75-3	0.000018	0.00000029	0.000048	ug/L	J,DXMB	U	В	
Total HxCDD	34465-46-8	0.000024	0.00000022	0.000048	ug/L	J,DXqMB	J	B, DNQ, *III	
Total HxCDF	55684-94-1	0.000015	0.00000017	0.000048	ug/L	J,DXMB	J	B, DNQ	
Гotal PeCDD	36088-22-9	0.0000041	0.00000026	0.000048	ug/L	J,DXq	J	DNQ, *III	
Total PeCDF	30402-15-4	0.0000068	0.00000021	0.000048	ug/L	J,DXq	J	DNQ, *III	
Total TCDD	41903-57-5	0.0000023	0.00000028	0.0000095	ug/L	J,DXq	J	DNQ, *III	
Total TCDF	55722-27-5	0.0000041	0.00000014	0.0000095	ug/L	J,DXqMB	J	B, DNQ, *III	

Thursday, January 17, 2019 Page 1 of 1



THE LEADER IN ENVIRONMENTAL TESTING

## **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226830-2

Client Project/Site: Annual Outfall 008 Comp

#### For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli fatel

Authorized for release by: 12/28/2018 11:37:14 AM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

----- LINKS -----

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

TestAmerica Job ID: 440-226830-2

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Uslii Patel

Urvashi Patel Manager of Project Management 12/28/2018 11:37:14 AM

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are

attached have been evaluated for completeness and quality control acceptability.

Project/Site: Annual Outfall 008 Comp

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226830-1	Outfall008_20181207_Comp	Water	12/07/18 11:05	12/07/18 21:05

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

Job ID: 440-226830-2

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226830-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 3.5° C.

#### Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: (CCV 320-266136/54), (LCS 320-264993/2-A), (LCSD 320-264993/3-A) and (MB 320-264993/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: Outfall008_20181207_Comp (440-226830-1), (CCV 320-266136/54), (LCS 320-264993/2-A), (LCSD 320-264993/3-A) and (MB 320-264993/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument 11D2 exceeded this criteria: Outfall008_20181207_Comp (440-226830-1) and (CCV 320-267413/2). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Dioxin Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

Lab Sample ID: 440-226830-1

. Matrix: Water

Client Sample ID: Outfall008_20181207_Comp Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000014	J,DX q	0.0000095	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	,
1,2,3,7,8-PeCDD	0.0000028	J,DX	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,7,8-PeCDF	0.0000027	J,DX	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
2,3,4,7,8-PeCDF	0.0000028	J,DX	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,4,7,8-HxCDD	0.0000046	J,DX MB	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,6,7,8-HxCDD	0.0000038	J,DX MB	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,7,8,9-HxCDD	0.0000053	J,DX MB	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,4,7,8-HxCDF	0.0000040	J,DX	0.000048	0.0000003	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,6,7,8-HxCDF	0.0000032	J,DX MB	0.000048	0 0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,7,8,9-HxCDF	0.0000034	J,DX MB	0.000048	0.0000001	ug/L		12/13/18 08:34	12/19/18 13:30	
2,3,4,6,7,8-HxCDF	0.0000031	J,DX	0.000048	7 0.000001	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,4,6,7,8-HpCDD	0.000030	J,DX MB	0.000048	7 0.0000003	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,4,6,7,8-HpCDF	0.0000081	J,DX MB	0.000048	0.0000003	ug/L		12/13/18 08:34	12/19/18 13:30	
1,2,3,4,7,8,9-HpCDF	0.0000039	J,DX MB	0.000048	2 0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
OCDD	0.00024	МВ	0.000095	9 0.0000005	ug/L		12/13/18 08:34	12/19/18 13:30	
OCDF	0.000021	J,DX MB	0.000095	0.0000003	ug/L		12/13/18 08:34	12/19/18 13:30	
Total TCDD	0.0000023	J,DX q	0.0000095	5 0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
Total TCDF	0.0000041	J,DX q MB	0.0000095	8 0.0000001	ug/L		12/13/18 08:34	12/19/18 13:30	
Total PeCDD	0.0000041	J,DX q	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
Total PeCDF	0.0000068	J,DX q	0.000048	6 0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
Total HxCDD	0.000024	J,DX q MB	0.000048	1 0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
Total HxCDF	0.000015		0.000048	0.0000001	ug/L		12/13/18 08:34	12/19/18 13:30	
Total HpCDD	0.000069	MB	0.000048	7 0.0000003	ug/L		12/13/18 08:34	12/19/18 13:30	
· Total HpCDF	0.000018		0.000048	7 0.0000002	ug/L		12/13/18 08:34	12/19/18 13:30	
		·	Limits	9	-		Branarad	Analyzad	Dile
Isotope Dilution	%Recovery	- Quantities					Prepared	Analyzed	Dil Fa
13C-2,3,7,8-TCDD	68		25 - 164					12/19/18 13:30	
13C-2,3,7,8-TCDF	66		24 - 169					12/19/18 13:30	
13C-1,2,3,7,8-PeCDD	62		25 - 181				12/13/18 08:34	12/19/18 13:30	
13C-1,2,3,7,8-PeCDF	63		24 - 185				12/13/18 08:34	12/19/18 13:30	
13C-2,3,4,7,8-PeCDF	54		21 - 178				12/13/18 08:34	12/19/18 13:30	
13C-1,2,3,4,7,8-HxCDD	63		32 - 141				12/13/18 08:34	12/19/18 13:30	

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

Lab Sample ID: 440-226830-1

Matrix: Water

Client Sample ID: Outfall008_	<u>.</u> 20181207	_Comp
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Date Collected: 12/07/18 11:05 Date Received: 12/07/18 21:05

Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	63		28 - 130				12/13/18 08:34	12/19/18 13:30	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152				12/13/18 08:34	12/19/18 13:30	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123				12/13/18 08:34	12/19/18 13:30	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147				12/13/18 08:34	12/19/18 13:30	1
13C-2,3,4,6,7,8-HxCDF	71		28 - 136				12/13/18 08:34	12/19/18 13:30	1
13C-1,2,3,4,6,7,8-HpCDD	85		23 - 140				12/13/18 08:34	12/19/18 13:30	1
13C-1,2,3,4,6,7,8-HpCDF	63		28 - 143				12/13/18 08:34	12/19/18 13:30	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138				12/13/18 08:34	12/19/18 13:30	1
13C-OCDD	59		17 - 157				12/13/18 08:34	12/19/18 13:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD	104		35 - 197				12/13/18 08:34	12/19/18 13:30	1
Method: 1613B - Dioxins	and Furans (HR	GC/HRMS	) - RA						
		Qualifier	, RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte	itouit	Qualifiei	11/2						
2,3,7,8-TCDF	0.0000019		0.0000095	0.0000006	ug/L		12/13/18 08:34	12/24/18 15:46	1
				0.0000006	ug/L		12/13/18 08:34	12/24/18 15:46	1
		J,DX MB		0.0000006	ug/L		12/13/18 08:34  Prepared	12/24/18 15:46  Analyzed	1 Dil Fac
2,3,7,8-TCDF	0.0000019	J,DX MB	0.0000095	0.0000006	ug/L				Dil Fac
2,3,7,8-TCDF  Isotope Dilution	0.0000019 %Recovery	J,DX MB  Qualifier	0.0000095 <i>Limits</i>	0.0000006	ug/L		Prepared	Analyzed	Dil Fac  Dil Fac

12/28/2018

## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC

#### **Protocol References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

#### **Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica Irvine

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

Project/Site: Annual Outfall 008 Comp

Client Sample ID: Outfall008_20181207_Comp

TestAmerica Job ID: 440-226830-2

Lab Sample ID: 440-226830-1

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			1047.8 mL	20 uL	264993	12/13/18 08:34	ITH	TAL SAC
Total/NA	Analysis	1613B		1			266136	12/19/18 13:30	AS	TAL SAC
Total/NA	Prep	1613B	RA		1047.8 mL	20 uL	264993	12/13/18 08:34	ITH	TAL SAC
Total/NA	Analysis	1613B	RA	1			267413	12/24/18 15:46	KSS	TAL SAC

#### **Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

TestAmerica Job ID: 440-226830-2

#### Lab Sample ID: MB 320-264993/1-A Matrix: Water Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Water Analysis Batch: 266136	МВ	МВ						Prep Type: To Prep Batch:	
Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
2,3,7,8-TCDF	0.000000723	J,DX	0.000010	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,7,8-HxCDD	0.00000169	J,DX q	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,6,7,8-HxCDD	0.000000854	J,DX	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8,9-HxCDD	0.00000226	J,DX	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,6,7,8-HxCDF	0.00000364	J,DX q	0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8,9-HxCDF	0.00000663	J,DX q	0.000050	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
2,3,4,6,7,8-HxCDF	ND		0.000050	7 0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,6,7,8-HpCDD	0.00000555	J,DX	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,6,7,8-HpCDF	0.00000357	J,DX q	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,7,8,9-HpCDF	0.00000186	J,DX q	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
OCDD	0.0000975	J,DX	0.00010	0.0000010	ug/L		12/13/18 08:34	12/19/18 05:04	1
OCDF	0.0000138	J,DX	0.00010	0.0000005	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total TCDD	ND		0.000010	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total TCDF	0.000000723	J,DX	0.000010	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total PeCDD	ND		0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total PeCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HxCDD	0.00000481	J,DX q	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HxCDF	0.00000103	J,DX q	0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HpCDD	0.0000116	J,DX	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HpCDF	0.00000658	J,DX q	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
	MB	MB		,					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	77		25 - 164				12/13/18 08:34	12/19/18 05:04	
13C-2,3,7,8-TCDF	76		24 - 169				12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,7,8-PeCDD	65		25 - 181					12/19/18 05:04	1

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TestAmerica Job ID: 440-226830-2

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-264993/1-A Client Sample ID: Method Blank **Matrix: Water Prep Type: Total/NA Prep Batch: 264993 Analysis Batch: 266136** MB MB 1

	IVID IVID				
Isotope Dilution	%Recovery Qualifi	ier Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDF	67	24 - 185	12/13/18 08:34	12/19/18 05:04	1
13C-2,3,4,7,8-PeCDF	63	21 - 178	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,7,8-HxCDD	74	32 - 141	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,6,7,8-HxCDD	74	28 - 130	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,7,8-HxCDF	70	26 - 152	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,6,7,8-HxCDF	70	26 - 123	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,7,8,9-HxCDF	80	29 - 147	12/13/18 08:34	12/19/18 05:04	1
13C-2,3,4,6,7,8-HxCDF	75	28 - 136	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,6,7,8-HpCDD	84	23 - 140	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,6,7,8-HpCDF	83	28 - 143	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,7,8,9-HpCDF	85	26 - 138	12/13/18 08:34	12/19/18 05:04	1
13C-OCDD	53	17 - 157	12/13/18 08:34	12/19/18 05:04	1

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 37CI4-2,3,7,8-TCDD 105 35 - 197 12/13/18 08:34 12/19/18 05:04

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ab Sample ID: LCS 320-264993/2-A			Client Sample ID: Lab Control Sample
latrix: Water			Prep Type: Total/NA
nalysis Batch: 266136			Prep Batch: 264993
•	Spike	LCS LCS	%Rec.

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2,3,7,8-TCDD	0.000200	0.000210	-	ug/L		105	67 - 158	
2,3,7,8-TCDF	0.000200	0.000215	MB	ug/L		108	75 - 158	
1,2,3,7,8-PeCDD	0.00100	0.00106		ug/L		106	70 - 142	
1,2,3,7,8-PeCDF	0.00100	0.00107		ug/L		107	80 - 134	
2,3,4,7,8-PeCDF	0.00100	0.00106		ug/L		106	68 ₋ 160	
1,2,3,4,7,8-HxCDD	0.00100	0.000974	MB	ug/L		97	70 - 164	
1,2,3,6,7,8-HxCDD	0.00100	0.00102	MB	ug/L		102	76 - 134	
1,2,3,7,8,9-HxCDD	0.00100	0.00124	MB	ug/L		124	64 - 162	
1,2,3,4,7,8-HxCDF	0.00100	0.00101		ug/L		101	72 - 134	
1,2,3,6,7,8-HxCDF	0.00100	0.000995	MB	ug/L		100	84 - 130	
1,2,3,7,8,9-HxCDF	0.00100	0.00104	MB	ug/L		104	78 ₋ 130	
2,3,4,6,7,8-HxCDF	0.00100	0.00101		ug/L		101	70 - 156	
1,2,3,4,6,7,8-HpCDD	0.00100	0.000963	MB	ug/L		96	70 - 140	
1,2,3,4,6,7,8-HpCDF	0.00100	0.000963	MB	ug/L		96	82 - 122	
1,2,3,4,7,8,9-HpCDF	0.00100	0.000965	MB	ug/L		97	78 ₋ 138	
OCDD	0.00200	0.00191	MB	ug/L		95	78 - 144	
OCDF	0.00200	0.00217	MB	ug/L		108	63 - 170	

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	79		20 - 175
13C-2,3,7,8-TCDF	81		22 - 152
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202

TestAmerica Irvine

TestAmerica Job ID: 440-226830-2

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

### Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-264993/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 266136 Prep Batch: 264993** 100 100

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	90		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	94		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	85		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	98		20 - 186
13C-OCDD	72		13 - 199
	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits

Lab Sample ID: LCSD 320-264993/3-A **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA

31 - 191

**Analysis Batch: 266136** 

37CI4-2,3,7,8-TCDD

Prep Batch: 264993 LCSD LCSD Spike %Rec. **RPD** Analyte Result Qualifier Limits RPD Added Unit D %Rec Limit 2,3,7,8-TCDD 0.000200 0.000206 103 67 - 158 2 ug/L 50 2,3,7,8-TCDF 0.000200 0.000211 MB ug/L 106 75 - 158 2 50 1,2,3,7,8-PeCDD 0.00100 0.00104 ug/L 104 70 - 142 50 1,2,3,7,8-PeCDF 0.00100 0.00103 ug/L 103 80 - 134 50 2,3,4,7,8-PeCDF 0.00100 0.00102 102 68 - 160 50 ug/L 97 1,2,3,4,7,8-HxCDD 0.00100 0.000968 MB ug/L 70 - 164 50 1 1,2,3,6,7,8-HxCDD 0.00100 0.00100 MB ug/L 100 76 - 134 2 50 64 - 162 1,2,3,7,8,9-HxCDD 0.00100 0.00106 MB ug/L 106 16 50 1,2,3,4,7,8-HxCDF 0.00100 0.000988 ug/L 99 72 - 134 2 50 1,2,3,6,7,8-HxCDF 0.00100 0.000987 MB ug/L 99 84 - 130 1 50 1,2,3,7,8,9-HxCDF 0.00100 0.00102 MB ug/L 102 78 - 130 50 2,3,4,6,7,8-HxCDF 0.00100 0.000995 99 70 - 156 50 ug/L 0.000950 MB 95 70 - 140 50 1,2,3,4,6,7,8-HpCDD 0.00100 ug/L 0.000973 MB 97 82 - 122 50 1,2,3,4,6,7,8-HpCDF 0.00100 ug/L 1,2,3,4,7,8,9-HpCDF 0.00100 0.000940 MB ug/L 94 78 - 138 50 OCDD 0.00200 0.00193 MB ug/L 97 78 - 144 50 **OCDF** 0.00200 0.00217 MB ug/L 108 63 - 17050

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		LCSD	LCSD				
	Isotope Dilution	%Recovery	Qualifier	Limits			
	13C-2,3,7,8-TCDD	82		20 - 175			
	13C-2,3,7,8-TCDF	82		22 - 152			
	13C-1,2,3,7,8-PeCDD	71		21 - 227			
	13C-1,2,3,7,8-PeCDF	74		21 - 192			
	13C-2,3,4,7,8-PeCDF	68		13 - 328			
	13C-1,2,3,4,7,8-HxCDD	77		21 - 193			
	13C-1,2,3,6,7,8-HxCDD	76		25 - 163			
ı	13C-1,2,3,4,7,8-HxCDF	73		19 - 202			
	13C-1,2,3,6,7,8-HxCDF	73		21 - 159			
ı	13C-1,2,3,7,8,9-HxCDF	88		17 - 205			
	13C-2,3,4,6,7,8-HxCDF	79		22 - 176			
	13C-1,2,3,4,6,7,8-HpCDD	91		26 - 166			
ı	13C-1,2,3,4,6,7,8-HpCDF	87		21 - 158			
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TestAmerica Irvine

Page 12 of 24

## **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-264993/3-A

**Matrix: Water** 

**Analysis Batch: 266136** 

Analysis Batch: 200130	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,4,7,8,9-HpCDF	94		20 - 186
13C-OCDD	63		13 - 199
	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
37CI4-2,3,7,8-TCDD	110		31 - 191

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 264993

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## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

## **Specialty Organics**

#### **Prep Batch: 264993**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	1613B	
440-226830-1 - RA	Outfall008_20181207_Comp	Total/NA	Water	1613B	
MB 320-264993/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-264993/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-264993/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

#### **Analysis Batch: 266136**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	1613B	264993
MB 320-264993/1-A	Method Blank	Total/NA	Water	1613B	264993
LCS 320-264993/2-A	Lab Control Sample	Total/NA	Water	1613B	264993
LCSD 320-264993/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	264993

## **Analysis Batch: 267413**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1 - RA	Outfall008_20181207_Comp	Total/NA	Water	1613B	264993

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## **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

**Qualifier Description** 

Reporting Limit or Requested Limit (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

Relative Percent Difference, a measure of the relative difference between two points

TestAmerica Job ID: 440-226830-2

#### **Qualifiers**

## **Dioxin**Qualifier

J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The
	measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### **Glossary**

RL

RPD

TEF

TEQ

Giossaiy	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)

TestAmerica Irvine

## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

#### **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	<b>EPA Region</b>	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

## **Laboratory: TestAmerica Sacramento**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

TestAmerica Irvine

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#### CHAIN OF CUSTODY FORM

Page 1 of 2

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Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures
Filter and preserve w/in 24hrs of receipt at lab
Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures
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#### TestAmerica Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

Phone (949) 261-1022 Fax (949) 260-3297

## **Chain of Custody Record**



<u>TestAmerica</u>

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:			Lab F Pate	M: I, Urv	ashi					Carrier Tr	acking N	lo(s):		COC No: 440-130570.1	
Client Contact: Shipping/Receiving	Phone:			E-Ma urva		atel@	testame	ericaino	c.com		State of C				Page: Page 1 of 1	
Company:					Accre	ditation	ns Requir	ed (See	note):					_	Job #:	
TestAmerica Laboratories, Inc.  Address: Due Date Requested:					State Program - California 440-226830-2 Preservation Codes:									dani		
880 Riverside Parkway, ,	12/26/2018							A	nalys	is Re	queste	i			A - HCL	M - Hexane
City: West Sacramento	TAT Requested (d.	ays):				als									B - NaOH C - Zn Acetate	N - None O - AsNaO2
State, Zip: CA, 95605						w/Tot									D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O4S Q - Na2SO3 R - Na2S2O3
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO#:				0	d List									G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate
Email:	wo#:				SorN	andar								2	J - Ice J - DI Water	U - Acetone V - MCAA
Project Name: Annual Outfall 008 Comp	Project #: 44009879				Š z	S								containe	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)
Site:	SSOW#:				ered Sample (	Sox S								to	Other:	
		Sample	Sample Type (C=comp,	Matrix Y=water, S=solid O=waste/oil,		1613B/1613B								Total Number		
Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab) s Preservation	T=Tissue, A=Air)	E 6	2 2	1000							- F	Special Ir	nstructions/Note:
		11:05	Preservation		Y			11111				++			See OAS Boeing	w/u to zero; Use Boeing
Outfall008_20181207_Comp (440-226830-1)	12/7/18	Pacific		Water	Ш	X	$\perp$							2	glassware.	
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Note: Since laboratory accreditations are subject to change, TestAmeric currently maintain accreditation in the State of Origin listed above for an Laboratories, Inc. attention immediately. If all requested accreditations	alysis/tests/matrix being analy	zed, the sam	ples must be ship	oped back to	the Tes	stAme	rica labora	atory or	other ins	tructions	es. This sa will be prov	mple shi ided. Ar	pment is for	orwarded of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the stora	under chain-of-custo ditation status should	dy. If the laboratory does not be brought to TestAmerica
Possible Hazard Identification					S	ampl	e Dispo	sal ( A	A fee m	ay be	assessed	if san	nples ar	e retain	ed longer than	1 month)
Unconfirmed							Return 1	To Clie	nt		Disposal I	By Lab		Archi	ive Far	Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliver	able Rank:	2		S	pecia	I Instruc	ctions/0	QC Red	quireme	ents:					
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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-226830-2

Login Number: 226830 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, Tim		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: Haley & Aldrich, Inc.

Job Number: 440-226830-2

Login Number: 226830 List Source: TestAmerica Sacramento
List Number: 3 List Creation: 12/11/18 05:45 PM

Creator: Her, David A

Creator: Her, David A		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.0c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-2

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)										
		TCDD	TCDF	PeCDD	PeCDF	PeCF	HxCDD	HxDD	HxCDF			
Lab Sample ID	Client Sample ID	(25-164)	(24-169)	(25-181)	(24-185)	(21-178)	(32-141)	(28-130)	(26-152)			
440-226830-1	Outfall008_20181207_Comp	68	66	62	63	54	63	63	61			
440-226830-1 - RA	Outfall008_20181207_Comp		70									
MB 320-264993/1-A	Method Blank	77	76	65	67	63	74	74	70			
			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)				
		HxDF	HxCF	13CHxCF	HpCDD	HpCDF	HpCDF2	OCDD				
Lab Sample ID	Client Sample ID	(26-123)	(29-147)	(28-136)	(23-140)	(28-143)	(26-138)	(17-157)				
440-226830-1	Outfall008_20181207_Comp	63	77	71	85	63	85	59	-			
440-226830-1 - RA	Outfall008_20181207_Comp											
MB 320-264993/1-A	Method Blank	70	80	75	84	83	85	53				

#### **Surrogate Legend**

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDD = 13C-1,2,3,6,7,8-HxCDD

HxCDF = 13C-1,2,3,4,7,8-HxCDF

HxDF = 13C-1,2,3,6,7,8-HxCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)									
		TCDD	TCDF	PeCDD	PeCDF	PeCF	HxCDD	HxDD	HxCDF		
Lab Sample ID	Client Sample ID	(20-175)	(22-152)	(21-227)	(21-192)	(13-328)	(21-193)	(25-163)	(19-202)		
LCS 320-264993/2-A	Lab Control Sample	79	81	70	72	60	67	67	64		
LCSD 320-264993/3-A	Lab Control Sample Dup	82	82	71	74	68	77	76	73		
			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)			
		HxDF	HxCF	13CHxCF	HpCDD	HpCDF	HpCDF2	OCDD			
Lab Sample ID	Client Sample ID	(21-159)	(17-205)	(22-176)	(26-166)	(21-158)	(20-186)	(13-199)			
LCS 320-264993/2-A	Lab Control Sample	69	90	78	94	85	98	72	-		
LCSD 320-264993/3-A	Lab Control Sample Dup	73	88	79	91	87	94	63			

#### **Surrogate Legend**

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDD = 13C-1,2,3,6,7,8-HxCDD

TestAmerica Irvine

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12/28/2018

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## **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

HxCDF = 13C-1,2,3,4,7,8-HxCDF HxDF = 13C-1,2,3,6,7,8-HxCDF HxCF = 13C-1,2,3,7,8,9-HxCDF 13CHxCF = 13C-2,3,4,6,7,8-HxCDF HpCDD = 13C-1,2,3,4,6,7,8-HpCDD HpCDF = 13C-1,2,3,4,6,7,8-HpCDF HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

TestAmerica Job ID: 440-226830-2

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# Sacramento Sample Receiving Notes



Job:

DD:_ 440-226830 Field

the job folder with the COC.				
Notes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / H	ACC	o / Ot	her
	Ice Wet Gel	Othe	r	
	Cooler Custody Seal:Sea			
	Sample Custody Seal:			-
	Cooler ID:			
	Temp: Observed \ Corrected	1.	0	
	From: Temp Blank D Sample.	A	0	
	B 11 ( ) ( ) ( )	Yes	No	<u>NA</u>
	Perchlorate has headspace?			Ø
	Alkalinity has no headspace?			Ø
	CoC is complete w/o discrepancies?	Ø		
	Samples received within holding time?	P		
	Sample preservatives verified?			D
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with?		P	
	Samples w/o discrepancies?	Ø		
	Sample containers have legible labels?	Ø		
	Containers are not broken or leaking?	D.		
	Sample date/times are provided.	Ø		
	Appropriate containers are used?	P		
	Sample bottles are completely filled?	Ø		
	Zero headspace?*			Ø
	Multiphasic samples are not present?	Ø		
	Sample temp OK?	Ø		
	Sample out of temp?		ø	

WZZR

#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-226830-3

## **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

22 January 2019







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#### I. INTRODUCTION

**Task Order Title:** Boeing SSFL NPDES **Contract:** 40458-078 and 40458-083 **MEC^x Project No.:** 1272.003H.01

Sample Delivery Group: 440-226830-3

**Project Manager:** Katherine Miller

Matrix: Water
QC Level: |||

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20181207 _Comp	440-226830-1	N/A	Water	12/07/2018 11:05	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-226830-3:

- The laboratories received the sample in this SDG on ice and within the temperature limits of ≤6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were not initialed or dated. The cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica St. Louis laboratory for all radionuclide analyses.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



#### **TABLE 3 - REASON CODE REFERENCE**

Reason										
Code	Organic	Inorganic								
Н	Holding time was exceeded.	Holding time was exceeded.								
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.								
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.								
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.								
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.								
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.								
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.								
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.								
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.								
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.								
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.								
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.								
А	Not applicable.	Serial dilution %D was outside control limits.								
М	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.								
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.								



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. VARIOUS EPA METHODS — RADIONUCLIDES

#### E. Wessling of MEC^x reviewed the SDGs on January 22, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

#### **III.1. HOLDING TIMES:**

The sample was received unpreserved. The sample was acidified and allowed to equilibrate. The sample was prepared within five days of preservation and analyzed following in-growth.

#### III.2. CALIBRATION:

The detector efficiency for gross alpha was less than 20%; therefore, the detected result for gross alpha was qualified as estimated (J-) with a potential negative bias. All other detector efficiencies were greater than 20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits. Calibration checks were not verified at a Level III validation.

#### III.3. QUALITY CONTROL SAMPLES

#### III.3.1. METHOD BLANKS

Target isotopes were not detected in the method blanks above the MDA. However, a comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 1% level of confidence for total uranium and radium-226. The detected sample results for total uranium and radium-226 were qualified as nondetect (U). No further qualifications were required.

#### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and RPDs were within laboratory-established control limits.

#### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were not performed on the sample from this SDG.

#### 111.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample from this SDG.

#### **III.4. SAMPLE RESULT VERIFICATION:**

An EPA Level III review was performed on the sample in this data package. As such, the sample results were not verified. Reported nondetects are valid to the MDC.

#### **III.5. FIELD QC SAMPLES:**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:



#### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS:

This SDG had no identified field blank or equipment blank samples.

#### III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

## Validated Sample Result Forms: 4402268303

Analysis Method E900

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

CAS No Result Total RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes *Ш Gross Alpha Analytes GROSSALPHA 14.8 3.81 3.00 3.08 pCi/L G Gross Beta Analytes GROSSBETA 15.5 2.46 4.00 1.71 pCi/L

Analysis Method E901.1

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

**MDC** Analyte CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Cesium-137 10045-97-3 0.483 10.6 20.0 18.7 pCi/L U U Potassium-40 U U 13966-00-2 -15.1 139 186 186 pCi/L

Analysis Method E903.0

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRO

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

Total RL**MDC** Analyte CAS No Result Result Lab Validation Validation Value **Oualifier** Uncert. Units Qualifier Notes 0.642 Radium-226 13982-63-3 0.309 0.326 pCi/L 1.00

Analysis Method E904.0

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

**Analyte** CAS No Result Total RL**MDC** Result Lab Validation Validation Uncert. Units Qualifier Value Qualifier Notes Radium-228 15262-20-1 0.673 0.632 1.00 1.01 pCi/L UG

Friday, January 25, 2019 Page 1 of 2

Analysis Method E905.0

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

**MDC Analyte** CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units **Qualifier Qualifier** Notes Strontium-90 10098-97-2 0.109 0.251 3.00 0.434 pCi/L

Analysis Method E906.0

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

CAS No Total RL**MDC Analyte** Result Result Lab Validation Validation Value Uncert. Units **Oualifier** Qualifier Notes -220 Tritium 10028-17-8 200 500 389 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL008_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

RL**MDC Analyte** CAS No Result **Total** Result Lab Validation Validation Value Uncert. Units Qualifier **Qualifier Notes** Total Uranium **URANIUM** 1.33 0.884 1.00 0.833 pCi/L

Analysis Method RADIUM

Sample Name OUTFALL008 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 11:05:00 AM Validation Level: 9

**Lab Sample Name:** 440-226830-1

RL**MDC** Analyte CAS No Result Total Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-226 & 228 RADIUM226228 1.01 0.698611 В

Friday, January 25, 2019 Page 2 of 2



THE LEADER IN ENVIRONMENTAL TESTING

## **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226830-3

Client Project/Site: Annual Outfall 008 Comp

#### For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli fatel

Authorized for release by: 1/10/2019 10:25:52 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ······

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Ushi fatel

Manager of Project Management

1/10/2019 10:25:52 PM

Urvashi Patel

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are

attached have been evaluated for completeness and quality control acceptability.

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226830-1	Outfall008_20181207_Comp	Water	12/07/18 11:05	12/07/18 21:05

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

Job ID: 440-226830-3

**Laboratory: TestAmerica Irvine** 

**Narrative** 

Job Narrative 440-226830-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 3.5° C.

#### Receipt Exceptions

The reference method requires samples to be preserved to a pH <2. The following samples was received with insufficient preservation at a pH of 7: Outfall008 20181207 Comp (440-226830-1). The samples were preserved with 10mL of nitric acid reagent #1598157, at 16:00 on 12/11/18, to reach the appropriate pH of 2 in the laboratory.

#### **RAD**

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-407614

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: Outfall008 20181207 Comp (440-226830-1). Analytical results are reported with the detection limit achieved.

Method(s) 904.0: Radium-228 Prep Batch 160-405521:

The detection goal was not met for the following samples due to the reduced sample volume attributed to the presence of matrix interferences (see prep NCM156513); Outfall008 20181207 Comp (440-226830-1), Samples 440-226869-1 and 440-226869-2 both had low(er) barium carrier recoveries that can contribute to an elevated MDC. Analytical results are reported with the detection limit achieved.

Method(s) ExtChrom: Uranium Prep Batch 160-405494:

Samples Outfall008 20181207 Comp (440-226830-1) were prepared at a reduced alignot due to gray and yellow discoloration and cloudiness.

Method(s) PrecSep 0: Radium-228 Prep Batch 405521:

The following samples were prepared at a reduced aliquot due to sediment and discoloration: Outfall008 20181207 Comp (440-226830-1).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-405504:

The following samples were prepared at a reduced aliquot due to sediment and discoloration: Outfall008 20181207 Comp (440-226830-1).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-405504:

The following samples have a different barium carrier recovery than the accompanying Ra-228 analysis method. This is due to the planchets getting re-tared and re-weighed after the separation step.

Outfall008 20181207 Comp (440-226830-1)

Method(s) PrecSep-7: Strontium-90 Prep Batch 405485:

The following sample was prepared at a reduced aliquot.

Outfall008 20181207 Comp (440-226830-1)

Job number 440-226822, 440-226863, 440-226867, and 440-226869 contained samples with a yellow, cloudy matrix.

Sample 440-226830-I-1 contained black sediment.

The samples in job 280-117873 contained red sediment.

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

CSU WITCHOO GOD ID. 440 220000 G

Job ID: 440-226830-3 (Continued)

**Laboratory: TestAmerica Irvine (Continued)** 

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Client Sample ID: Outfall008_20181207_Comp

TestAmerica Job ID: 440-226830-3

Lab Sample ID: 440-226830-1

Matrix: Water

Date Collected: 12/07/18 11:05 Date Received: 12/07/18 21:05

ross Alpha	and Gros	s Beta Rac	lioactivity						
•		Count	Total						
		Uncert.	Uncert.						
Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
14.8	G	3.41	3.81	3.00	3.08	pCi/L	12/27/18 10:23	12/31/18 09:30	1
15.5		1.91	2.46	4.00	1.71	pCi/L	12/27/18 10:23	12/31/18 09:30	1
	Result 14.8	Result Qualifier	Count Uncert.   (2σ+/-)   14.8   G   3.41	Uncert. Uncert.	Count Uncert.         Total Uncert.           Result Qualifier 14.8 G         (2σ+/-) (2σ+/-) RL 3.81           3.41         3.81           3.00	Count   Total   Uncert.   Uncert.   Uncert.   Count   Uncert.   Uncert.   Uncert.   Count   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   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Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   U	Count   Total   Uncert.   Uncert.   Uncert.   Result   Qualifier   (2σ+/-)   (2σ+/-)   RL   MDC   Unit   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   MDC   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L   PCi/L	Count Uncert. Uncert.   Uncert.   Uncert.   Uncert.   Uncert.   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out   Out	Count Uncert.         Total Uncert.           Result Qualifier         (2σ+/-)         (2σ+/-)         RL MDC Unit Prepared 12/27/18 10:23         Prepared 12/27/18 10:23         Analyzed 12/27/18 10:23           14.8 G         3.41         3.81         3.00         3.08 pCi/L         12/27/18 10:23         12/31/18 09:30

Method: 901.1 -	Cesium 137	& Other G	amma Emi	tters (GS)						
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.483	U	10.6	10.6	20.0	18.7	pCi/L	12/12/18 02:07	12/17/18 17:57	1
Potassium-40	-15.1	U	139	139		186	pCi/L	12/12/18 02:07	12/17/18 17:57	1
 Method: 903.0 -	Radium-226	(GFPC)								
			Count	Total						

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.642	-	0.304	0.309	1.00	0.326	pCi/L	12/13/18 11:03	01/04/19 08:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	63.4		40 - 110					12/13/18 11:03	01/04/19 08:39	1

Method: 904.0 - Ra	dium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.673	UG	0.629	0.632	1.00	1.01	pCi/L	12/13/18 13:19	12/21/18 14:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.2		40 - 110					12/13/18 13:19	12/21/18 14:11	
Y Carrier	78.9		40 - 110					12/13/18 13:19	12/21/18 14:11	1

Method: 905 - Stro	ntium-90 (	GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.109	Ū	0.251	0.251	3.00	0.434	pCi/L	12/13/18 08:52	12/31/18 12:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					12/13/18 08:52	12/31/18 12:20	1
Y Carrier	95.7		40 - 110					12/13/18 08:52	12/31/18 12:20	1

Method: 906.0 - Tritium, Total (LSC)										
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-220	$\overline{U}$	199	200	500	389	pCi/L	01/07/19 11:23	01/07/19 19:39	1

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Client Sample ID: Outfall008_20181207_Comp

TestAmerica Job ID: 440-226830-3

Lab Sample ID: 440-226830-1

Lab Sample ID. 440-226630-1

Matrix: Water

Date Collected: 12/07/18 11:05
Date Received: 12/07/18 21:05

	Isotopic Ur	anium (Al	pha Spectr	ometry)						
	•	•	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	1.33		0.881	0.884	1.00	0.833	pCi/L	12/13/18 09:58	12/14/18 17:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.9		30 - 110					12/13/18 09:58	12/14/18 17:42	1

5

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9

11

13

14

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
\-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
ill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
SC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
recSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### **Protocol References:**

DOE = U.S. Department of Energy EPA = US Environmental Protection Agency

None = None

#### **Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica Irvine

## **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

Project/Site: Annual Outfall 008 Comp

Client Sample ID: Outfall008_20181207_Comp

TestAmerica Job ID: 440-226830-3

Lab Sample ID: 440-226830-1

12/13/18 09:58 KNF

12/14/18 17:42 ALS

**Matrix: Water** 

TAL SL

TAL SL

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			137 mL	1.0 g	407614	12/27/18 10:23	MRB	TAL SL
Total/NA	Analysis	900.0		1			408344	12/31/18 09:30	CDR	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 mL	405196	12/12/18 02:07	MPT	TAL SL
Total/NA	Analysis	901.1		1			406064	12/17/18 17:57	JLW	TAL SL
Total/NA	Prep	PrecSep-21			499.98 mL	1.0 g	405504	12/13/18 11:03	MMO	TAL SL
Total/NA	Analysis	903.0		1			408962	01/04/19 08:39	CDR	TAL SL
Total/NA	Prep	PrecSep_0			499.98 mL	1.0 g	405521	12/13/18 13:19	MMO	TAL SL
Total/NA	Analysis	904.0		1	1.0 mL	1.0 mL	406931	12/21/18 14:11	CDR	TAL SL
Total/NA	Prep	PrecSep-7			500.05 mL	1.0 g	405485	12/13/18 08:52	HET	TAL SL
Total/NA	Analysis	905		1			408308	12/31/18 12:20	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	409225	01/07/19 11:23	JDL	TAL SL
Total/NA	Analysis	906.0		1			409354	01/07/19 19:39	RTM	TAL SL

100.05 mL

1

1.0 mL

405494

405843

#### **Laboratory References:**

Prep

Analysis

Total/NA

Total/NA

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

ExtChrom

A-01-R

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

# Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-407614/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Analysis Batch: 408333 **Prep Batch: 407614** 

			Count	ı otai						
	MB N	ИB	Uncert.	Uncert.						
Analyte	Result C	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.6321 U	J	0.677	0.680	3.00	1.10	pCi/L	12/27/18 10:23	12/31/18 09:20	1
Gross Beta	-0.1631 U	J	0.514	0.514	4.00	0.930	pCi/L	12/27/18 10:23	12/31/18 09:20	1

Lab Sample ID: LCS 160-407614/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 408333 Prep Batch: 407614** Total Spike LCS LCS Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits 3.00 Gross Alpha 50.9 46.07 6.69 1.74 pCi/L 90 73 - 133

Lab Sample ID: LCSB 160-407614/3-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 408333 Prep Batch: 407614** Total

Spike LCSB LCSB %Rec. Uncert. Added Limits Analyte Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec **Gross Beta** 87.1 86.97 9.22 4.00 0.929 pCi/L 100 75 - 125

Lab Sample ID: 440-226822-J-1-G MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

Analysis Batch: 408344

Total Sample Sample MS MS %Rec. Spike Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits

Gross Alpha 1.10 Ū 50.9 5.35 3.00 1.02 pCi/L 60 - 140 38.18 73 Lab Sample ID: 440-226822-J-1-H MSD **Client Sample ID: Matrix Spike Duplicate** 

**Matrix: Water** Prep Type: Total/NA Analysis Batch: 408344 **Prep Batch: 407614** Total

Sample Sample **Spike** MSD MSD Uncert. %Rec. **RER** Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Gross Alpha 1.10 U 50.9 46.14 6.30 3.00 1.16 pCi/L 88 60 - 140 0.68

Lab Sample ID: 440-226822-J-1-I MSBT **Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Matrix: Water** Analysis Batch: 408344

Total Sample Sample **Spike** MSBT MSBT Uncert. %Rec. Result Qual Added Limits Analyte Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec **Gross Beta** 2.28 87.1 88.52 9.38 4.00 1.06 pCi/L 99 60 - 140

TestAmerica Irvine

1/10/2019

**Prep Batch: 407614** 

Prep Batch: 407614

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-226822-J-1-J MSBTD

**Matrix: Water** 

Analysis Batch: 408344

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

Prep Batch: 407614

						i otai						
	Sample	Sample	Spike	MSBTD	MSBTD	Uncert.				%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Gross Beta	2.28		87.1	87.44		9.26	4.00	1.04 pCi/L	98	60 - 140	0.06	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-405196/1-A

**Matrix: Water** 

**Analysis Batch: 405206** 

Client Sample ID: Method Blank **Prep Type: Total/NA** 

**Prep Batch: 405196** 

			Count	i otai						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.771	U	6.28	6.28	20.0	11.0	pCi/L	12/12/18 02:07	12/12/18 06:12	1
Potassium-40	-48.63	U	190	190		236	pCi/L	12/12/18 02:07	12/12/18 06:12	1

Lab Sample ID: LCS 160-405196/2-A

**Matrix: Water** 

**Analysis Batch: 405207** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 405196** 

				Total					•	
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Americium-241	136000	124900		14400		350	pCi/L	92	90 - 111	
Cesium-137	45100	42160		4230	20.0	168	pCi/L	94	90 - 111	
Cobalt-60	31300	30340		3000		66.0	pCi/L	97	89 - 110	

Lab Sample ID: 280-117873-B-1-B DU

**Matrix: Water** 

Analysis Batch: 405207

**Client Sample ID: Duplicate** 

**Prep Type: Total/NA** Prep Batch: 405196

Alialysis Date	,II. <del>T</del> UJZU	•							i iep Dat	CII. 70	JJ 1 JU	
_					Total							
	Sample	Sample	DU	DU	Uncert.						RER	
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit	
Cesium-137	-3.30	U	5.059	U	8.98	20.0	15.1	pCi/L	 	0.45	1	
Potassium-40	1.18	U	25.26	U	141		185	pCi/L		0.08	1	

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-405504/20-A

51.3

**Matrix: Water** 

Ba Carrier

**Client Sample ID: Method Blank** 

12/13/18 11:03 01/04/19 08:39

Prep Type: Total/NA

Analysis Batch: 40	<b>08962</b>								Prep Batch:	405504
•			Count	Total					•	
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.09638	U	0.181	0.182	1.00	0.323	pCi/L	12/13/18 11:03	01/04/19 08:39	1
	МВ	MB								
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac

40 - 110

TestAmerica Irvine

Prep Batch: 405504

Prep Type: Total/NA

Prep Batch: 405504

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-405504/1-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 408961** Prep Batch: 405504 Total

Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 15.1 13.80 1.60 1.00 0.236 pCi/L 91 68 - 137

LCS LCS %Yield Qualifier Carrier I imits Ba Carrier 63.4 40 - 110

Lab Sample ID: 440-226822-F-1-F MS **Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 408962

Total Sample Sample MS MS %Rec. **Spike** Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Radium-226 0.117 U 15.1 14.50 1.77 1.00 0.317 pCi/L 95 75 ₋ 138

MS MS Carrier %Yield Qualifier Limits Ba Carrier 45.4 40 - 110

Lab Sample ID: 440-226822-F-1-G MSD **Client Sample ID: Matrix Spike Duplicate** 

**Matrix: Water** 

**Analysis Batch: 408962** 

Total Sample Sample Spike MSD MSD Uncert. %Rec. **RER** Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Radium-226 15.1 1.00 75 - 138 0.117 U 1.84 0.365 pCi/L 99 0.15 15.06

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 43.1 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-405521/20-A Client Sample ID: Method Blank Prep Type: Total/NA **Matrix: Water Analysis Batch: 406931 Prep Batch: 405521** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 -0.01266 Ū 0.314 0.314 1.00 0.566 pCi/L 12/13/18 13:19 12/21/18 14:11

MB MB Carrier **%Yield Qualifier** Limits Prepared Dil Fac Analyzed Ba Carrier 90.0 40 - 110 12/13/18 13:19 12/21/18 14:11 Y Carrier 81.9 40 - 110 12/13/18 13:19 12/21/18 14:11

1/10/2019

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

**Client Sample ID: Matrix Spike** 

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

**Prep Batch: 405521** 

Prep Type: Total/NA

# Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-405521/1-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 406931 **Prep Batch: 405521** Total

Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-228 12.1 13.92 1.00 0.603 pCi/L 115 56 - 140 1.64

LCS LCS Carrier %Yield Qualifier I imits Ba Carrier 90.6 40 - 110 Y Carrier 76.3 40 - 110

Lab Sample ID: 440-226822-F-1-H MS

**Matrix: Water** 

**Analysis Batch: 406931** 

Total Sample Sample **Spike** MS MS Uncert. %Rec. Limits **Analyte** Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Radium-228 0.407 U 12.1 17.84 2.13 1.00 0.816 pCi/L 144 45 - 150

MS MS Carrier %Yield Qualifier Limits Ba Carrier 70.2 40 - 110 Y Carrier 71.4 40 - 110

Lab Sample ID: 440-226822-F-1-I MSD

**Matrix: Water** 

Analysis Batch: 406931

**Prep Batch: 405521** Total MSD MSD %Rec. **RER** Sample Sample Spike Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit 0.407 U Radium-228 12.1 1.68 1.00 0.666 pCi/L 45 - 150 1.09 13.69 109

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 72.0 40 - 110 80.7 40 - 110 Y Carrier

#### Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-405485/17-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Prep Batch: 405485

Analysis Batch: 408308

Count Total MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Strontium-90 1.005 0.356 0.365 3.00 0.482 pCi/L 12/13/18 08:52 12/31/18 12:21

ΜB MB Carrier Qualifier Limits Prepared Dil Fac %Yield Analyzed Sr Carrier 87.5 40 - 110 12/13/18 08:52 12/31/18 12:21 40 - 110 12/13/18 08:52 12/31/18 12:21 Y Carrier 93.1

TestAmerica Irvine

1/10/2019

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-405485/1-A **Matrix: Water** 

Analysis Batch: 408344

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Prep Batch: 405485

Total Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Strontium-90 16.3 16.09 1.66 3.00 0.590 pCi/L 99 75 - 125

LCS LCS Carrier %Yield Qualifier I imits Sr Carrier 86.5 40 - 110 Y Carrier 91.6 40 - 110

Lab Sample ID: 440-226822-F-1-B MS

**Matrix: Water** 

Analysis Batch: 408344

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Prep Batch: 405485** 

Total Sample Sample **Spike** MS MS Uncert. %Rec. Limits Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Strontium-90 0.0693 U 16.2 16.08 1.68 3.00 0.616 pCi/L 99 19 - 150

MS MS Carrier %Yield Qualifier Limits Sr Carrier 79.7 40 - 110 Y Carrier 93.1 40 - 110

Lab Sample ID: 440-226822-F-1-C MSD

**Matrix: Water** 

**Analysis Batch: 408333** 

Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

Prep Batch: 405485

Total MSD MSD %Rec. **RER** Sample Sample Spike Uncert. **MDC** Unit Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL %Rec Limits RER Limit Strontium-90 0.0693 U 14.35 1.55 3.00 0.596 pCi/L 19 - 150 0.54 16.2 88

MSD MSD Carrier %Yield Qualifier Limits Sr Carrier 72.0 40 - 110 93.8 40 - 110 Y Carrier

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-409225/1-A

**Matrix: Water** 

Analysis Batch: 409354

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 409225

Count Total MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Tritium -243.2 Ū 191 192 500 374 pCi/L 01/07/19 11:23 01/07/19 17:46

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-409225/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 409354 Prep Batch: 409225

Total Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits

Tritium 2650 2230 404 500 380 pCi/L 74 - 114 Lab Sample ID: 440-226822-E-1-D MS Client Sample ID: Matrix Spike **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 409354

**Prep Batch: 409225** Total Sample Sample Spike MS MS Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit Limits %Rec Tritium -198 U 2650 2644 443 500 384 pCi/L 100 67 - 130

Lab Sample ID: 440-226822-E-1-E MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Water** Prep Type: Total/NA **Prep Batch: 409225** 

Analysis Batch: 409354

Uranium-232

84 N

Total Spike MSD MSD %Rec. **RER** Sample Sample Uncert. Added **MDC** Unit Limits Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL %Rec RER Limit Tritium -198 U 2660 2568 440 500 392 pCi/L 97 67 - 130 0.09

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-405494/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA Analysis Batch: 405954 Prep Batch: 405494

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Total Uranium 0.1880 Ū 0.175 0.175 1.00 0.191 pCi/L 12/13/18 09:58 12/14/18 17:43

ΜB Tracer Qualifier Limits Dil Fac %Yield Prepared Analyzed Uranium-232 30 - 110 12/13/18 09:58 12/14/18 17:43 87.7

Lab Sample ID: LCS 160-405494/2-A **Client Sample ID: Lab Control Sample** 

**Matrix: Water** Prep Type: Total/NA Analysis Batch: 405955 Prep Batch: 405494

Total Spike LCS LCS Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Uranium-234 12.7 12.06 1.52 1.00 0.201 pCi/L 95 75 - 125 75 - 125

Uranium-238 13.0 12.91 1.59 1.00 pCi/L 99 0.136 LCS LCS Tracer %Yield Qualifier Limits

30 - 110

1/10/2019

# **QC Sample Results**

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

Lab Sample ID: 440-226822-F-1-D MS

**Matrix: Water** 

Analysis Batch: 405841

Client Sample ID: Matrix Spike Prep Type: Total/NA

**Prep Batch: 405494** 

					Total					
Sample \$	Sample	Spike	MS	MS	Uncert.					%Rec.
Result (	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC U	Jnit	%Rec	Limits
0.347		25.4	23.35		3.51	1.00	0.550 p	Ci/L	90	65 - 146
0.157 l	U	26.0	25.55		3.72	1.00	0.549 p	Ci/L	98	68 - 143
	Result 0.347	Sample         Sample           Result         Qual           0.347         0.157	Result 0.347         Qual 25.4	Result 0.347         Qual 25.4         Added 25.4         Result 23.35	Result 0.347         Qual 25.4         Added 25.4         Result 23.35         Qual 24.35	Sample Result 0.347         Spike Added Pesult 25.4         MS MS Uncert. Qual (2σ+/-) 3.51	Sample Result 0.347         Spike Added Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Par	Sample Sample         Spike         MS MS         Uncert.           Result 0.347         Added 25.4         Result 23.35         Qual (2σ+/-) RL MDC 1.00         RL MDC 1.00           3.51         1.00         0.550         p	Sample Result 0.347         Spike Added Parameter Added 2.3.35         MS MS Uncert. (2σ+/-) RL MDC Unit 0.550         MDC Unit pCi/L	Result 0.347         Qual 25.4         Result 23.35         Qual 23.35         (2σ+/-) RL 1.00         RL D. MDC Unit 0.550         WRec pCi/L 90

MS MS

Tracer %Yield Qualifier Limits Uranium-232 30 - 110 40.8

> Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

**Prep Batch: 405494** 

Lab Sample ID: 440-226822-F-1-E MSD

**Matrix: Water** 

Analysis Batch: 405842

•						Total				•		
	Sample	Sample	Spike	MSD	MSD	Uncert.				%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Uranium-234	0.347		25.5	24.00		3.98	1.00	0.747 pCi/L	93	65 - 146	0.09	1
Uranium-238	0.157	U	26.0	25.07		4.09	1.00	0.694 pCi/L	96	68 - 143	0.06	1

MSD MSD %Yield Qualifier Tracer Limits Uranium-232 30.3 30 - 110

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

## Rad

<b>Prep</b>	Batch:	405196
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	Fill_Geo-0
MB 160-405196/1-A	Method Blank	Total/NA	Water	Fill_Geo-0
LCS 160-405196/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0
280-117873-B-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0

#### **Prep Batch: 405485**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	PrecSep-7	
MB 160-405485/17-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-405485/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-226822-F-1-B MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-226822-F-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

#### **Prep Batch: 405494**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	ExtChrom	
MB 160-405494/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-405494/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-226822-F-1-D MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-226822-F-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

## **Prep Batch: 405504**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	PrecSep-21	
MB 160-405504/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-405504/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-226822-F-1-F MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-226822-F-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

## **Prep Batch: 405521**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	PrecSep_0	· <del></del> -
MB 160-405521/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-405521/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-226822-F-1-H MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-226822-F-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

## **Prep Batch: 407614**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	Evaporation	
MB 160-407614/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-407614/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-407614/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-226822-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-226822-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-226822-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-226822-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

#### **Prep Batch: 409225**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

# Rad (Continued)

# Prep Batch: 409225 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-409225/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-409225/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-226822-E-1-D MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-226822-E-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Job ID: 440-226830-3

# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

## **Qualifiers**

#### Rad

TEF

TEQ

Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin)

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Abbreviation	These commonly used abbreviations may or may not be present in this report.
m m	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc. TestAmerica Job ID: 440-226830-3

Project/Site: Annual Outfall 008 Comp

## **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

# Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-19
lowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18 *
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

^{*} Accreditation/Certification renewal pending - accreditation/certification considered valid.

## CHAIN OF CUSTODY FORM

Page 1 of 2

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Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Reco (E200 7) / Hardness (E200.8) /	[2]	Ct. F. S Perchlor	P	2	<b>5030</b>	8 1 2 2 3	δĒ	¥	õ	٤	۱٩	₽.			<u> </u>
Description			WW	500 ml. Poly	1	HNO ₃	85	No	×												1		1	
}			WM	1 L Glass Amber	2	None	110	No		×	1													
1 1			<del> </del>		-		<del> </del>	<del></del>								$\vdash \dashv$				_			1	48 hours Holding Time NO3 & NO2
1			WM	500 m£ Poly	2	None	125	No			×													40 SOC 1 TOOL 9 1 1110 1103 G 1102
1 1			WM	500 mL Poly	1	None	155	No				X												
LI			WM	500 mL Poly	1	H2SO4	160	No									х							<u> </u>
ĬÓ [			WM	1L Poly	1	None	185	No					Х											<u> </u>
<b>5</b>			WM	500 mL Poly	1	NaOH	220	No										x					7	
Φ Ì	Outfail098 20181207_Comp	12/7/2018	WM	2.5 Gel Cube	1	None	225	No			$\vdash$										$\neg$			Linfitered and unpreserved
l)	Optimio00_20151201_50(hp		AAIN	23 54 500	<u> </u>	Nuite		110							x	$\vdash$					_			analysis, Separate RAD onto another workorder Analyze
P		1105	WM	1 L Glass Amber	1	None	230	No									- 1		- 1	1	- 1	- 1	1	duplicate, not MS/MSD
₽.		1100	<b></b>		<u> </u>	<u></u>	<del> </del>	}	ļ							-							-	Only test if first or second rain
Outfail 008			WM	1 Gal Cube	R	None	235	No				- 1				х				1				events of the year
			WM	1 L Glass Amber	2	None	250	No											х				Ĩ	
ł į	l		1		<del>-</del>		<del>                                     </del>	1				1										1		na vot open
]			WM	-besosilicate vials	1	18103	313	160-	سهم يور											x		- 1		Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury
			1						notty	•		1					- 1		- 1	- 1	- 1	- 1	I	Prep using clean procedures
1 1					<del>  .                                     </del>	None	195	No	,					х							$\neg \neg$			Filter and preserve win 24hrs of
{		)	WM	St. Poly	,	None	185	ND	<b></b>														┵—	recept at lab
	Outfail008 20181207_Comp_F	12/7/2018		1	1		1	1	l i			- 1							- 1	- 1	1	- 1		Sample receiving DC NOT OPEN
		11105	WM	borosilicate vials	1	None	320	No				- 1					1		- 1	Į	×	- 1	ı	BAG Sag to be opened in Mercury
!!		• •	<u> </u>	<u> </u>	<u> </u>			<u> </u>			1					$\vdash$				[				Prep using clean procedures
1 [			WM	1 L Glass Amber	2	None	110	No		Н													-	Hold
	Outfall008_20181207_Comp_Extra	12/7/2018	WM	500 ml, Poly	21	None	125	No			Н													Hold
		1107	WM	1 L Glass Amber	2	None	250	No											н					Hold
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<b>}</b>			······································																					
			·····				Legend	: R = Rc	utine, A = A	nnual	l													
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Page 24 of 29

Client Contact:

Company:

Address:

Earth City State, Zip: MO, 63045

Project Name:

City:

Phone:

Shipping/Receiving





Sampler:

Phone:

1/8/2019

PO #:

WO#:

Project #:

44009879 SSOW#:



Due Date Requested:

TAT Requested (days):





## **TestAmerica Irvine**

TestAmerica Laboratories, Inc.

13715 Rider Trail North,

Annual Outfall 008 Comp

Phone (949) 261-1022 Fax (949) 260-3297

314-298-8566(Tel) 314-298-8757(Fax)

Client Information (Sub Contract Lab)

17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Chain of Custody Record		Record	У	Custod	of	Chain
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y F	lec	ю	rd									AND DESCRIPTION	merico
E-Ma	el, Ur il:									Carrier Tracking No(s): State of Origin:		COC No: 440-130568.1 Page:	
urva	Accr	redita	ations	Requ	uired (	ainc. See r forni	note):			California		Page 1 of 1 Job #: 440-226830-3	
	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901.1_Cs/Fill_Geo_0 K-40 and Cesium-137	A01R_U/ExtChrom_Actin Total Uranium	900.0/Evaporation Gross Alpha/Beta	903.0/PrecSep_21 Radium-226	904.0/PrecSep_0 Radium-228	905_Sr90/PrecSep_7 Strontium-90	Susp Tritium	uested	r of containers	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
S=solic efoil, A=Air	Field Filtere	Perform MS/	901.1 Cs/Fill	A01R_U/ExtC	900.0/Evapora	903.0/PrecSep	904.0/PrecSep	905_Sr90/Pred	906.0/LSC_Dist		Total Number	Special Ir	nstructions/Note:
er	n	$\triangle$	×	×	X	X	X	Х	X		2	Boeing SSFL; DO	NOT FILTER; use prep

					Sar	99	tChrom	ation	211	OR	cSep	t Su		ofe	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Perform MS/I	901.1_Cs/Fill_	A01R_U/ExtCh	900.0/Evapora	903.0/PrecSep_	904.0/PrecSep	905_Sr90/Prec	906.0/LSC_Dist_		Total Number	Special Instructions/Note:
	$\sim$	><	Preserva	ation Code:	XX		1	Male	THE	12 4	13		1100	X	
Outfall008_20181207_Comp (440-226830-1)	12/7/18	11:05 Pacific		Water		×	x	x	х	X	х	х		2	Boeing SSFL; DO NOT FILTER; use prep date from preservation
					$\forall$	1									
					H		H						++-	150	
			-		$\vdash$	+									
					H	-	-								
					Ш										
					П									A	
Note: Since laboratory accreditations are subject to change. TestAme					ш			_			_				

ote: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	W		Sample Disposal ( A fee may	be assessed if samples are retained	d longer than 1 month)
Unconfirmed			Return To Client	Disposal By Lab	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2		Special Instructions/QC Require		, resmonuto
Empty Kit Relinquished by:	Date:	To The second	Time:	Method of Shipment:	Market Service Market No.
Relinquished by:	Date/Time:	Company	Received by part	Date/Time:	11:10 Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time;	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Custody Seal No.:			Cooler Temperature(s) °C and Ott	her Remarks:	

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-226830-3

Login Number: 226830 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, Tim		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: Haley & Aldrich, Inc. Job Number: 440-226830-3

List Source: TestAmerica St. Louis
List Number: 2
List Creation: 12/11/18 03:46 PM

Creator: Dupart, Lacee S

Creator: Dupart, Lacee S	Anower	Commont
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

Method: 903.0 - Radium-226 (GFPC)

**Matrix: Water** Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ba Carrier	
Lab Sample ID	Client Sample ID	(40-110)	
440-226822-F-1-F MS	Matrix Spike	45.4	
440-226822-F-1-G MSD	Matrix Spike Duplicate	43.1	
440-226830-1	Outfall008_20181207_Comp	63.4	
LCS 160-405504/1-A	Lab Control Sample	63.4	
MB 160-405504/20-A	Method Blank	51.3	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			<del></del>

Method: 904.0 - Radium-228 (GFPC)

**Matrix: Water** Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ba Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-226822-F-1-H MS	Matrix Spike	70.2	71.4	
440-226822-F-1-I MSD	Matrix Spike Duplicate	72.0	80.7	
440-226830-1	Outfall008_20181207_Comp	75.2	78.9	
LCS 160-405521/1-A	Lab Control Sample	90.6	76.3	
MB 160-405521/20-A	Method Blank	90.0	81.9	
Tracer/Carrier Legend				
Ba Carrier = Ba Carrier				

Y Carrier = Y Carrier

Y Carrier = Y Carrier

Method: 905 - Strontium-90 (GFPC)

**Matrix: Water** Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Sr Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-226822-F-1-B MS	Matrix Spike	79.7	93.1	
440-226822-F-1-C MSD	Matrix Spike Duplicate	72.0	93.8	
440-226830-1	Outfall008_20181207_Comp	84.4	95.7	
LCS 160-405485/1-A	Lab Control Sample	86.5	91.6	
MB 160-405485/17-A	Method Blank	87.5	93.1	
Tracer/Carrier Legend				
Tracer/Carrier Legend Sr Carrier = Sr Carrier				

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Matrix: Water** Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		ranium-23	
Lab Sample ID	Client Sample ID	(30-110)	
440-226822-F-1-D MS	Matrix Spike	40.8	
440-226822-F-1-E MSD	Matrix Spike Duplicate	30.3	
440-226830-1	Outfall008_20181207_Comp	71.9	

TestAmerica Irvine

1/10/2019

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# **Tracer/Carrier Summary**

Client: Haley & Aldrich, Inc.

Uranium-232 = Uranium-232

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-3

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		ranium-23	
Lab Sample ID	Client Sample ID	(30-110)	
LCS 160-405494/2-A	Lab Control Sample	84.0	<del>_</del>
MB 160-405494/1-A	Method Blank	87.7	

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# Sacramento Sample Receiving Notes



Job:

Tracking # 4538 3728 1540

SO (PO) FO / 2-Day / SAT / Ground / UPS / Courier /

Drop Off / GSO / OnTrac / Goldstreak / USPS / Other _

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.

lotes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / HA	ACCF	o / Ot	ner
	/ /	Other		
	Cooler Custody Seal:Sea			
	Sample Custody Seal:			
	Cooler ID:			
	Temp: Observed \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	0	
	From: Temp Blank  Sample	0		
	NCM Filed: Yes □ No			
		Yes	No	NA
	Perchlorate has headspace?			Ø
	Alkalinity has no headspace?			Ø
	CoC is complete w/o discrepancies?	Ø	D	
	Samples received within holding time?	Ø		
	Sample preservatives verified?	_		D
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with?		P	
	Samples w/o discrepancies?	Ø		
	Sample containers have legible labels?	卢		
	Containers are not broken or leaking?	D.		
	Sample date/times are provided.	Ø		
	Appropriate containers are used?	P		
	Sample bottles are completely filled?	Ø		
	Zero headspace?*			Ø
	Multiphasic samples are not present?	Ø		
	Sample temp OK?	Ø		
	Sample out of temp?		ø	
	Initials:	8		

WZZR

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THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226830-4

Client Project/Site: Annual Outfall 008 Comp

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli Patel

Authorized for release by: 1/25/2019 11:19:44 AM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

----- LINKS -----

Review your project results through

Total Access

**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Ushi fatel

TestAmerica Job ID: 440-226830-4

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are

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attached have been evaluated for completeness and quality control acceptability.

# **Table of Contents**

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

Lab Camarla ID	Olient Commis ID	Bankulu	Callagéad	Descional
Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226830-1	Outfall008_20181207_Comp	Water	12/07/18 11:05	12/07/18 21:05

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

Job ID: 440-226830-4

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226830-4

#### Comments

Analysis added past hold per client request.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 3.5° C.

#### **Receipt Exceptions**

The reference method requires samples to be preserved to a pH <2. The following samples was received with insufficient preservation at a pH of 7: Outfall008_20181207_Comp (440-226830-1). The samples were preserved with 10mL of nitric acid reagent #1598157, at 16:00 on 12/11/18, to reach the appropriate pH of 2 in the laboratory.

#### **General Chemistry**

Method(s) 180.1, SM 2130B: The following sample was received outside of holding time: Outfall008 20181207 Comp (440-226830-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

Lab Sample ID: 440-226830-1

**Matrix: Water** 

Client Sample ID: Outfall008_20181207_Comp Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

	General Chemistry									
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
l	Turbidity	890	BU	10	4.0	NTU			01/24/19 19:09	100

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

Method	Method Description	Protocol	Laboratory
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV

#### **Protocol References:**

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

#### Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

1/25/2019

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## **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

Lab Sample ID: 440-226830-1

**Matrix: Water** 

Client Sample ID: Outfall008_20181207_Comp Date Collected: 12/07/18 11:05

Date Received: 12/07/18 21:05

	Batch	Batch		Dil Initial		Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	180.1		100			524797	01/24/19 19:09	CMM	TAL IRV

#### **Laboratory References:**

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

Client Sample ID: Method Blank

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Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-524797/5

Lab Sample ID: 440-231269-A-3 DU

**Matrix: Water** 

**Analysis Batch: 524797** 

MB MB

AnalyteResult<br/>TurbidityQualifierRLMDLUnitDPreparedAnalyzedDil FacTurbidityND0.100.040NTU0.040NTU0.1/24/19 19:091

Client Sample ID: Duplicate Prep Type: Total/NA

Prep Type: Total/NA

**Matrix: Water** 

Analyte

Turbidity

**Analysis Batch: 524797** 

 Sample
 Sample
 DU
 DU
 RPD

 Result
 Qualifier
 Result
 Qualifier
 Unit
 D
 RPD
 Limit

 3.7
 3.89
 NTU
 NTU
 5
 20

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

# **General Chemistry**

# **Analysis Batch: 524797**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226830-1	Outfall008_20181207_Comp	Total/NA	Water	180.1	
MB 440-524797/5	Method Blank	Total/NA	Water	180.1	
440-231269-A-3 DU	Duplicate	Total/NA	Water	180.1	

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-226830-4

## **Qualifiers**

## **General Chemistry**

Qualifier	Qualifier Description								
BU	Analyzed out of holding time								

# Glossary

MDA

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)

MDC Minimum Detectable Concentration (Radiochemistry) MDL Method Detection Limit ML Minimum Level (Dioxin)

Not Calculated NC

ND Not Detected at the reporting limit (or MDL or EDL if shown)

Minimum Detectable Activity (Radiochemistry)

PQL Practical Quantitation Limit

QC **Quality Control** 

**RER** Relative Error Ratio (Radiochemistry)

RLReporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

**TEF** Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) **TEQ** 

TestAmerica Irvine

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226830-4

Project/Site: Annual Outfall 008 Comp

# **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	<b>EPA</b> Region	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

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#### CHAIN OF CUSTODY FORM

Page 1 of 2

									R/A	R	R/A	R	Α	R/A	R		R								
Client Name	/Address		*************			roject									AN	ALYS	SRE	OUR	ED ,						
Haley & Ald	drich			!		SSFL NPDES				l	z	1			_ ~ \$	1				_			- 1	1	
5333 Missio	n Center Rd Suite 300					mit 2018 Outfall [008]				ŀ	+NO2-N,				700. Total 37,8				g l	(E245 1)	_			Ì	
San Diego, C					Outfall 008			ង៍	1	Ž			Ą	s Beta(E900 0), 5 (E905 0), Total 33 0 or E903 1) & Num (E908 0), K				(E608)	ų.	(E245.1)			1		
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TestAmenca's ser	ruces under this CoC shall be performed in accordance	with the T&Cs within Blanket Service	e tā	Projec	t Mana	ger Katherin	e Miller		Caco	Š	1	Į,	25	# 4 4 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	88 48 6	8 8	0,2)	Š	3	8	Metals:				
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Sample	Sample I.D.	Sampling Date/Time	Sample	Container Type	# of	Preservative	Rottle #	MS/MSD	Total Recoverable Me (E200 7) Al. As. B. B. Hardness as CaCO3 (E200.8): Ag. Cd. Cu.	TCDD (and all congeners)	Ch. F., SO4, Nitrate-N, Nitrite-N, Perchlorate (300)	TDS (SM2540C/E160 1)	TSS (160 2 (SM2540D))	Total Dissolved Metals (E200.7), Al, As, B. Be, Hardness as CaCO3 (E200.8) Ag, Cd, Cu, F.	Gross Apha(E900 0), Gr Tritum (H-3) (E906 0), S Combred Radium 226 ( Radium 228 (E904 0), U CS-137 (E901 0 or E901	Chronic Toxicity - Selena (EPA-821-R-02-013)	Ammonta-N (350.2)	Cyanide (8M4500-CN-E / E335	Pronty Pollutants-Pesticides+PCBs	Total Recoverable	ĭ₫ ∰	- 1			
Description	Sample I.O.	Samping Date/Time	Matrix		Cont.			<u> </u>		F	10 5		<u> </u>	FELE	O F O E O	0.5	~				-			<del> </del>	
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1 1			WM	1 L Glass Amber	2	None	110	No		X	$\vdash$					├─									
1			WM	500 m L Poly	2	None	125	No			×					<u> </u>								48 hours Holding Time NO3 & NO2	
1			WM	500 ml. Poly	1	None	155	No				Х				L_									
L			WM	500 mL Poly	1	H2SO4	160	No									х								
Page 13 of 19			WM	1L Poly	1	None	185	No					Х												
<b>₽</b> (			WM	500 mL Poly	1	NaOH	220	No										Х							
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F 1			WM	1 L Glass Amber	1	None	230	No	!		1 1	} }		'		<b> </b>			L	1		1		duplicate, not MS/MSD	
F: I			WM	1 Gal Cube	1	None	235	No								х	- T			T				Only test if first or second rain events of the year	
Outfail 008					15		ļ	<del></del>	-	├	+	-						-	×					events of the year	
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#### TestAmerica Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

## **Chain of Custody Record**



**TestAmerica** 

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:			Lab F Pate	PM: el, Urv	ashi	i			Carrier '	Tracking No(s	i):		COC No: 440-130570.1		
Client Contact: Shipping/Receiving	Phone:			E-Ma		atel©	@testame	ericaino	com	State of Califor				Page: Page 1 of 1		
Company: TestAmerica Laboratories, Inc.				Julya	Accres	ditatio	ons Requir ogram - C	ed (See	note):	Camor	1110			Job #: 440-226830-2		
Address: 880 Riverside Parkway, ,	Due Date Request 12/26/2018	ed:						A	nalysis I	Requeste	d			Preservation Cod	les: M - Hexane	
City: West Sacramento	TAT Requested (d.	ays):					2							A - HCL B - NaOH C - Zn Acetate	N - None O - AsNaO2	
State, Zip: CA, 95605						Standard Liet w/ Totale	W I CE							D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O4S Q - Na2SO3 R - Na2S2O3	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO#:				6	1	O LIST							G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate	3
Email:	WO#:				S or N	Or NO)	Glica						2	J - Ice J - DI Water	U - Acetone V - MCAA	
Project Name: Annual Outfall 008 Comp	Project #: 44009879				le (Ye	Son b S	7						containe	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)	
Site:	SSOW#:				Samp	S you							of	Other:		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (w=water, S=solid O=waste/oil, BT=Tissue, A=Air) ation Code:	Field Filtered	1643B							Total Number	Special In	structions/Note:	
Outfall008_20181207_Comp (440-226830-1)	12/7/18	11:05 Pacific		Water	ľΥ	,	×							See QAS, Boeing_ glassware.	w/u to zero; Use Boeir	g
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Note: Since laboratory accreditations are subject to change, TestAmeric currently maintain accreditation in the State of Origin listed above for an Laboratories, Inc. attention immediately. If all requested accreditations	alysis/tests/matrix being analy	zed, the sam	ples must be s	shipped back to	the Tes	stAme	erica labora	atory or o	ther instructi	ons will be pre						
Possible Hazard Identification					S	amp	ole Dispo	osal ( A	fee may	be assess	ed if samp	les are ret	taine	ed longer than 1	month)	
Unconfirmed							Return 1			Disposa	By Lab	$\Box_A$	rchi	ve Far	Months	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliver	able Rank:	2		S	peci	al Instruc	ctions/C	C Require	ements:						
Empty Kit Relinquished by:	1 1	Date:			Time					М	ethod of Shipi					
Relinionished by:	Date/Times	5 WF	10.	Company	M		eceived by	* pu	mo /	hosas	12		10	60	Company TH-SAC	
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Relinquished by:	Date/Time:			Company		Re	eceived by:				Date	e/Time:			Company	
Custody Seals Intact: Custody Seal No.:						Co	ooler Temp	erature(s	c) °C and Oth	er Remarks:	1.0					١

Ver: 09/20/2016









## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-226830-4

Login Number: 226830 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, 11m		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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# Sacramento Sample Receiving Notes



Job:

OD:_ 440-226830 Field

Perchlorate has headspace?  Alkalinity has no headspace?  CoC is complete w/o discrepancies?  Samples received within holding time?  Sample preservatives verified?  Cooler compromised/tampered with?  Samples compromised/tampered with?  Samples w/o discrepancies?  Sample containers have legible labels?  Containers are not broken or leaking?  Sample date/times are provided.  Appropriate containers are used?  Sample bottles are completely filled?  Zero headspace?*  Multiphasic samples are not present?  Sample temp OK?	bb folder with the COC.	Custody Seal, Temperature & corrected Temperature &			
Cooler Custody Seal:  Sample Custody Seal:  Cooler ID:  Temp: Observed O Corrected O  From: Temp Blank O Sample D  NCM Filed: Yes O No O  Perchlorate has headspace?  Alkalinity has no headspace?  CoC is complete w/o discrepancies? O O  Samples received within holding time? O O  Sample preservatives verified? O O  Cooler compromised/tampered with? O O  Samples w/o discrepancies? O O  Samples w/o discrepancies? O O  Samples w/o discrepancies? O O  Sample containers have legible labels? O O  Containers are not broken or leaking? O O  Sample date/times are provided. O O  Appropriate containers are used? O O  Sample bottles are completely filled? O O  Zero headspace?*  Multiphasic samples are not present? O O  Sample temp OK?			ACCF	o / Ot	her
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Perchlorate has headspace?  Alkalinity has no headspace?  CoC is complete w/o discrepancies?  Samples received within holding time?  Sample preservatives verified?  Cooler compromised/tampered with?  Samples compromised/tampered with?  Samples w/o discrepancies?  Sample sw/o discrepancies?  Sample containers have legible labels?  Containers are not broken or leaking?  Sample date/times are provided.  Appropriate containers are used?  Sample bottles are completely filled?  Zero headspace?*  Multiphasic samples are not present?  Sample temp OK?					
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Sample bottles are completely filled?  Zero headspace?*  Multiphasic samples are not present?  Sample temp OK?		— Appropriate containers are used?	P		
Multiphasic samples are not present?		Sample bottles are completely filled?			
Sample temp OK?		Zero headspace?*			Ø
		Multiphasic samples are not present?	区		
Sample out of temp?		Sample temp OK?	Ø		
Campic out of temp:		Sample out of temp?		ø	

WZZR

### Patel, Urvashi

**From:** Miller, Katherine <KMiller@haleyaldrich.com>

Sent: Thursday, January 24, 2019 1:05 PM

**To:** Patel, Urvashi **Subject:** RE: turbidity request

#### -External Email-

Whichever sample is the comp sample for OF008

Katherine Miller HALEY & ALDRICH Tel: 520.289.8606

From: Patel, Urvashi < <a href="mailto:Urvashi.Patel@testamericainc.com">Urvashi.Patel@testamericainc.com</a>>

Sent: Thursday, January 24, 2019 1:55 PM

**To:** Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Subject: RE: turbidity request

Hi

I think there is one extra digit in the job listed below. I'm assuming you meant 440-226830 sample-3?

Thanks, Urvashi

#### **URVASHI PATEL**

Manager of Project Management

#### Test America

THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Ave, Suite #100 Irvine, CA 92614 TEL 949-261-1022 | FAX 949-260-3297 DIRECT 949-260-3269 CELL 949-333-9055

www.testamericainc.com

**From:** Miller, Katherine [mailto:KMiller@haleyaldrich.com]

Sent: Thursday, January 24, 2019 10:43 AM

To: Patel, Urvashi

Subject: turbidity request

Importance: High

#### -External Email-

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Please analyze turbidity on 24hr TAT for Outfall008 440-226-8303.

Katherine

#### **Katherine Miller**

Project Manager

#### Haley Aldrich, Inc.

600 South Meyer Ave. | Suite 100 Tucson, AZ 85701

T: (520) 289.8606 C: (520) 904.6944

www.haleyaldrich.com

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#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226546-1

#### **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

9 January 2019





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- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



#### INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226546-1

**Project Manager:** Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20181206 _Grab	440-226546-1	N/A	Water	12/06/2018 10:00 AM	E1664



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226546-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the Login Sample Receipt Checklist, custody seals were absent on the cooler; however, no evidence of tampering was noted.

The following issue was noted:

• The COC did not list collection times; therefore, the samples were logged per the bottle labels.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



#### **TABLE 3 - REASON CODE REFERENCE**

Reason	Organic Inorganic							
Code	Organic	Inorganic						
Н	Holding time was exceeded.	Holding time was exceeded.						
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.						
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.						
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.						
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.						
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.						
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.						
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.						
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.						
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.						
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.						
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.						
А	Not applicable.	Serial dilution %D was outside control limits.						
М	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.						
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.						



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. EPA METHOD 1664A — HEM (OIL AND GREASE)

M. Hilchey of MEC^x reviewed the SDG on January 9, 2019.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 1664A and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

#### **III.1. HOLDING TIMES**

The analytical holding time, 28 days, was met.

#### III.2. CALIBRATION

Analytical balance calibration logs were not provided by the laboratory. The batch notes stated that the analytical balance was checked with acceptable results before and after each first and second weighing.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

The method blank was nondetect.

#### III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries and RPD were within the QAPP control limits.

#### III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analysis was not performed on the sample in this SDG.

#### 111.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

#### **III.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample result reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

#### III.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

#### 111.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

## Validated Sample Result Forms: 4402265461

Analysis Method: E1664

Sample Name C	Outfall009_20181206_0	Grab	Mat	rix Type:	W R	esult Type	: TRG			
Lab Sample Name:	440-226546-1	Sample Date/Time:	12/06/	/2018	10:00		Validati	Validation Level: 8		
Analyte	CAS No	-	sult alue	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code	
HEM (Oil & Grease)	HEMOIL	GREASE 1.6		1.5	5.2	mg/L	J,DX	J	DNQ	

Wednesday, January 16, 2019 Page 1 of 1



THE LEADER IN ENVIRONMENTAL TESTING

## **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226546-1

Client Project/Site: Semiannual Outfall 009 Grab

#### For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Ushi Patel

Authorized for release by: 12/31/2018 11:44:50 AM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ·······

Review your project results through

Total Access

**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Project/Site: Semiannual Outfall 009 Grab

Usli fatel

Manager of Project Management

12/31/2018 11:44:50 AM

Urvashi Patel

TestAmerica Job ID: 440-226546-1

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Page 2 of 14

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Grab

TestAmerica Job ID: 440-226546-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226546-1	Outfall009_20181206 _Grab	Water	12/06/18 10:00	12/06/18 18:00

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

TestAmerica Job ID: 440-226546-1

Job ID: 440-226546-1

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226546-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/6/2018 6:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

#### **Receipt Exceptions**

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: Outfall009_20181206 _Grab (440-226546-1) and Outfall009_20181206 _Grab_Extra (440-226546-2). The time not listed on the COC and was taken from the container -10:00

#### **Organic Prep**

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-519877 and analytical batch 440-519983. The Laboratory Control Sample (LCS) was performed in duplicate to provide precision data for this batch

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

Client Sample ID: Outfall009_20181206 _Grab

TestAmerica Job ID: 440-226546-1

Lab Sample ID: 440-226546-1

Matrix: Water

Date Collected: 12/06/18 10:00 Date Received: 12/06/18 18:00

General Chemistry							
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.6 J,DX	5.2	1.5 mg/L		12/28/18 13:23	12/29/18 08:09	1

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## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

TestAmerica Job ID: 440-226546-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV
1664A	HEM and SGT-HEM (SPE)	1664A	TAL IRV

#### **Protocol References:**

1664A = EPA-821-98-002

#### **Laboratory References:**

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

Client Sample ID: Outfall009_20181206 _Grab

TestAmerica Job ID: 440-226546-1

Lab Sample ID: 440-226546-1

Matrix: Water

Matrix: Water

Date Collected: 12/06/18 10:00 Date Received: 12/06/18 18:00

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			955 mL	1000 mL	519877	12/28/18 13:23	JC1	TAL IRV
Total/NA	Analysis	1664A		1			519983	12/29/18 08:09	JC1	TAL IRV

**Laboratory References:** 

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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## QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

TestAmerica Job ID: 440-226546-1

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 519877** 

**Prep Type: Total/NA** 

Prep Batch: 519877

Prep Type: Total/NA

**Prep Batch: 519877** 

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-519877/1-A **Matrix: Water** 

Analysis Batch: 519983

MB MB

Analyte

Result Qualifier ND

RL 5.0 MDL Unit 1.4 mg/L Prepared

Analyzed <u>12/28/18 13:23</u> <u>12/29/18 08:09</u>

Dil Fac

**RPD** 

Limit

Lab Sample ID: LCS 440-519877/2-A

**Matrix: Water** 

HEM (Oil & Grease)

**Analysis Batch: 519983** 

Analyte HEM (Oil & Grease)

Spike Added 40.0

Spike

Added

40.0

LCS LCS 34.1

34.6

Result Qualifier

Unit %Rec mg/L

Limits 78 - 114 **Client Sample ID: Lab Control Sample Dup** 

%Rec.

**Client Sample ID: Lab Control Sample** 

Lab Sample ID: LCSD 440-519877/3-A

**Matrix: Water** 

Analysis Batch: 519983

Analyte HEM (Oil & Grease) LCSD LCSD

Result Qualifier Unit mg/L

D %Rec 87

85

%Rec. Limits RPD 78 - 114

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

## **General Chemistry**

#### **Prep Batch: 519877**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226546-1	Outfall009_20181206 _Grab	Total/NA	Water	1664A	
MB 440-519877/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-519877/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-519877/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

#### **Analysis Batch: 519983**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226546-1	Outfall009_20181206 _Grab	Total/NA	Water	1664A	519877
MB 440-519877/1-A	Method Blank	Total/NA	Water	1664A	519877
LCS 440-519877/2-A	Lab Control Sample	Total/NA	Water	1664A	519877
LCSD 440-519877/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	519877

TestAmerica Job ID: 440-226546-1

## **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

TestAmerica Job ID: 440-226546-1

#### **Qualifiers**

#### **General Chemistry**

J,DX Estimated value; value < lowest standard (MQL), but >than MDL

### **Glossary**

MDA

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)

MDC Minimum Detectable Concentration (Radiochemistry)
MDL Method Detection Limit
ML Minimum Level (Dioxin)

NC Minimum Level (Dioxii
NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

Minimum Detectable Activity (Radiochemistry)

PQL Practical Quantitation Limit

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TestAmerica Irvine

## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226546-1

Project/Site: Semiannual Outfall 009 Grab

## **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	<b>EPA Region</b>	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

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	e/Address:					Project:			R					ANAL	YSIS	REQU	IRED				Field Re	adings	Mete	r serial #	LJU						
5333 Missi	Aldrich, Inc on Center Rd Suite 300 CA 92108			Boeing-SSFL NPDES Permit 2018 Semiannual Outfall [003-007, 009, 010] Outfall 009																•	_	s: (Includ	ie units)								
Test America Contact. Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-19-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc  Sampler: Den Smith Tukin Purk				nerica Contact. Urvashi Patel Grab Derian Ave Suite #100 A 92614 -260-3269																		7pH u									
						nager: Kathe 06, 520.904.6			MA-HEN												readings				_						
				Field Manager: Mark Dominick 978 234 5033, 818.599 0702 (cell)					Oil & Grease (E1664A-HEM)																						ced by:_ fime:/
Sample Description	Sample I D	Sampling Date/Time	Sample Matnx	Container Type	# of Cont	Preservative	Bottle #	MS/MSE	988		<u> </u>											Cor	nments								
Outfail 009	Outfali009_20181206_Grab	12/6/2018	WM	1 L Glass Amber	2	HCI	15	No	×								<u> </u>														
	Outfeli009_20181206_Grab_Extra	12/6/2018	WM	1 L Głass Amber	2	HCI	15	No	H	-	-							-		Hold											
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																	-	-	-	<del> </del>											
Relinquished E	By Date/Time	у Соп	прапу				Receive	nd By			- C	ate/Tim	10						Turn-a	round tim	e (Checi	)									
2	12-6	18/1430 J	401	/ ~	11	doll		2	<del>-</del>	-	į	12.6	,/8	, 1	14	30							10 Day								
Relinquished E	Date/Time 12.6.18		hpany FIRV		//-		Receive	nd By	_1		C	Date/Tim	18						Sampl	Integrity	(Check)	c	on ice	. 1.	9/2						
Relanquished E	by Date/Time	Con	npany				Receive	(B)	<i>(</i> )	11	} 1/	Date/Tim ソレ	ie ,	12/	6	1 8	18	W	Store s	amples for equirement	or 6 mont ints (Che	ns ck)	ve! !V		/1.3 1 <b>Q</b> 13						









## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-226546-1

Login Number: 226546 List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Creator: Aviia, Stephanie 1		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226822-1

#### **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

10 January 2019





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#### **TABLES**

- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



#### I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226822-1

**Project Manager:** Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 2

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20181207_ Comp	440-226822-1	N/A	Water	12/07/2018 09:00 AM	E200.7, E200.8, E245.1, E300, E314.0, SM2540C/D, SM4500-CN-E, EPA- 821-R-02-013
Outfall009_20181207_ Comp_F	440-226822-2	N/A	Water	12/07/2018 9:00 AM	E200.7, E200.8, E245.1



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COC) provided by the laboratories for sample delivery group (SDG) 440-226822-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers; however, no evidence of tampering was noted.
- Sample Outfall009_20181207_Comp was submitted to Aquatic Bioassay Consulting Laboratories (ABC) for Method EPA-821-R-02-013 Chronic Toxicity Selenastrum.
- A correction to the original COC was not initialed and dated.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



#### **TABLE 3 - REASON CODE REFERENCE**

Reason	Passon			
Code	Organic	Inorganic		
Н	Holding time was exceeded.	Holding time was exceeded.		
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.		
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.		
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.		
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.		
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.		
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.		
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.		
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.		
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.		
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.		
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.		
А	Not applicable.	Serial dilution %D was outside control limits.		
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.		
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.		



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. METHODS 200.7, 200.8 AND 245.1 — METALS AND MERCURY

M. Hilchey of MEC^x reviewed the SDG on January 10, 2019.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7, 200.8 and 245.1, and the National Functional Guidelines for Inorganic Data Review (2014).

### **III.1. HOLDING TIMES**

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met. As required on the COC, sample Outfall009_20181207_Comp_F was filtered and preserved within 24 hours of receipt at the laboratory.

#### III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were ≤5%.

QAPP calibration criteria were met. A blank and two standards were used for calibration of ICP-AES, a blank and four standards were used for calibration of ICP-MS, and a blank and five standards were used for calibration of mercury. The initial calibration r values were ≥0.995. CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105% for ICP-AES and mercury, and 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110% for all methods.

### **III.3. QUALITY CONTROL SAMPLES**

### III.3.1. METHOD BLANKS

There were no detections in the method blanks and calibration blanks for any target analytes except dissolved antimony (0.690  $\mu$ g/L, CCB). The associated sample result was a detect below the RL and was qualified as nondetect (U).

### **III.3.2. INTERFERENCE CHECK SAMPLES:**

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or ±2× the reporting limit, whichever is greater. No interferents were present in the samples at concentrations comparable to those of the ICSs; therefore, interference was not evaluated.

### III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the QAPP control limits of 85-115%.

### **III.3.4.** LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

### 111.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall009_20181207_Comp and Outfall009_20181207_Comp_F for all methods. Results were not assessed when the parent sample concentration exceeded the spike amount by  $4\times$ . Recoveries and RPDs were within the QAPP control limits of 70-130% and  $\leq$ 20%, respectively, for all target analytes.



The laboratory did not perform post-digestion spike analyses.

### III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

### III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the ICP-MS calibration blank.

### III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Nondetects are valid to the MDL.

#### III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

### 11.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

### |||.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

### IV. EPA METHOD 314.0 — PERCHLORATE

M. Hilchey of MEC^X reviewed the SDG on January 10, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 314.0, and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

### **IV.1. HOLDING TIMES**

The analytical holding time, 28 days, was met.

### IV.2. CALIBRATION

Calibration criteria were met. The initial calibration  $r^2$  value was  $\geq$ 0.995. The initial calibration recovery was within QAPP control limits of 75-125% and the continuing calibration recoveries were within QAPP control limits of 85-115%. The MRL was recovered within the QAPP control limits of 70-130%. Interference check sample recovery was within the QAPP control limits of 80-120%.



### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

### IV.3.2. LABORATORY CONTROL SAMPLES

The LCS recovery was within the QAPP control limits of 85-115%.

### IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

### IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall009_20181207_Comp. Recoveries and the RPD met QAPP control limits of 80-120% and ≤15%, respectively.

### **IV.4. SAMPLE RESULT VERIFICATION**

Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

### **IV.5. FIELD QC SAMPLES**

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

### IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

### IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

### V. VARIOUS METHODS — GENERAL CHEMISTRY

M. Hilchey of MEC^X reviewed the SDG on January 10, 2019.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Methods 300.0 and EPA-821-R-02-213, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D and 4500-CN-E, and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

#### V.1. HOLDING TIMES

The analytical hold times, as listed below, were met:

- 48 hours from collection for nitrate as N and nitrite as N
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)



- 28 days for chloride and sulfate
- 14 days for total cyanide
- 36 hours from collection for Chronic Toxicity Selenastrum

#### V.2. CALIBRATION

Calibration criteria were met. The initial calibration  $r^2$  values, as appropriate, were  $\geq$ 0.995 and all initial calibration verification recoveries were within 95-105% for anions and 90-110% for total cyanide. All continuing calibration verification recoveries were within 90-110% for all appropriate analyses. Analytical balance calibration logs were provided by the laboratory.

For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity. Method Test Acceptability criteria (TAC) were met.

### V.3. QUALITY CONTROL SAMPLES

### V.3.1. **METHOD BLANKS**

The method blanks and calibration blanks had no detects. The laboratory negative controls were within the laboratory and method established compliance criteria for chronic toxicity.

#### V.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicates recoveries and RPDs, as applicable, were within the laboratory control limits. Positive controls were within the laboratory and method established compliance criteria for chronic toxicity.

#### V.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

### V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample Outfall009_20181207_Comp for anions and total cyanide. Laboratory control limits of 50-125% recovery and ≤20% RPD were met for all target analytes. Matrix spike analysis was not performed on a sample from this SDG for the remaining methods.

### V.4. SAMPLE RESULT VERIFICATION

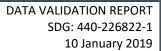
Calculations were verified, and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

#### V.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

### V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.





## V.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402268221

Analysis Met	<i>thod:</i> E200.7							
Sample Name Ou	ıtfall009_20181207_Con	пр	Matrix Ty	ype: W ]	Result Typ	e: TRG		
Lab Sample Name:	440-226822-1 <b>Sa</b> i	mple Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Nickel	7440-02-0		5.0	10	ug/L	U	U	
Zinc	7440-66-6		12	20	ug/L	U	U	
Sample Name Ou	ıtfall009_20181207_Con	np_F	Matrix Ty	ype: W l	Result Typ	e: TRG		
Lab Sample Name:	440-226822-2 <b>Sa</b> i	mple Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Nickel	7440-02-0		5.0	10	ug/L	U	U	
Zinc	7440-66-6		12	20	ug/L	U	U	
Analysis Met	<i>thod:</i> E200.8							
Sample Name Ou	utfall009_20181207_Con	np	Matrix Ty	ype: W 1	Result Typ	e: TRG		
Lab Sample Name:		mple Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier		Validation Reason Code
Antimony	7440-36-0		0.50	2.0	ug/L	U	U	
Cadmium	7440-43-9		0.25	1.0	ug/L	U	U	
Copper	7440-50-8	4.5	0.50	2.0	ug/L			
Lead	7439-92-1	2.5	0.50	1.0	ug/L			
Selenium	7782-49-2	0.57	0.50	2.0	ug/L	J,DX	J	DNQ
Silver	7440-22-4		0.50	1.0	ug/L	U	U	
Thallium	7440-28-0		0.50	1.0	ug/L	U	U	
Sample Name Ou	ıtfall009_20181207_Con	np_F	Matrix Ty	ype: W l	Result Typ	e: TRG		
Lab Sample Name:	440-226822-2 San	mple Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Antimony	7440-36-0	0.69	0.50	2.0	ug/L	J,DX	U	В
Cadmium	7440-43-9		0.25	1.0	ug/L	U	U	
Copper	7440-50-8	4.8	0.50	2.0	ug/L			
Lead	7439-92-1	0.62	0.50	1.0	ug/L	J,DX	J	DNQ
	7702 to 2		0.50	2.0	ug/L	U	U	
Selenium	7782-49-2		0.50	2.0	ug/ L	•	•	
Selenium Silver	7/82-49-2		0.50	1.0	ug/L	U	U	

Thursday, January 17, 2019 Page 1 of 3

#### Analysis Method: E245.1

Sample Name Out	fall009_20	181207 (	Comp	Matrix Tv	pe: W I	Result Tyn	e: TRG		
Lab Sample Name:	440-226822	_	Sample Date/Time:	12/07/2018	09:00			on Level: 8	
Analyte		CAS No	•	DL	LOQ	Result Units	Lab Qualifier		Validation Reason Code
Mercury		7439-97-6	6	0.10	0.20	ug/L	U	U	
Sample Name Out	fall009_20	181207_C	Comp_F	Matrix Ty	pe: W I	Result Typ	e: TRG		
Lab Sample Name:	440-226822	2-2	Sample Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier		Validation Reason Code
Mercury		7439-97-6	6	0.10	0.20	ug/L	U	U	
Analysis Met	hod:	E300							
Sample Name Out	fall009_20	181207_C	Comp	Matrix Ty	pe: W I	Result Typ	e: TRG		
Lab Sample Name:	440-226822	2-1	Sample Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Chloride		16887-00-	-6 2.5	0.25	0.50	mg/L			
Nitrate as N		14797-55	-8 0.96	0.055	0.11	mg/L			
Nitrate Nitrite as N		NO2NO3	0.96	0.055	0.15	mg/L			
Nitrite as N		14797-65	-0	0.025	0.15	mg/L	U	U	
Sulfate  Analysis Meta	hod:	E314.0		0.25	0.50	mg/L			
Sample Name Out	fall009_20	181207_C	Comp	Matrix Ty	pe: W I	Result Typ	e: TRG		
Lab Sample Name:	440-226822	2-1	Sample Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Perchlorate		14797-73	-0	0.95	4.0	ug/L	U	U	
Analysis Meta	hod:	EPA-8	321-R-02-013						
Sample Name Out	fall009_20	181207_ C	Comp	Matrix Ty	pe: 1	Result Typ	e: TRG		
Lab Sample Name:	440-226822	_	Sample Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Chronic Toxicity, Selenastro	um		SELEN 10.02			% SUR	2V		
Analysis Meta	hod:	SM25	40C						
Sample Name Out	fall009_20	181207_C	Comp	Matrix Ty	pe: W I	Result Typ	e: TRG		
Lab Sample Name:	440-226822	2-1	Sample Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte		CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
			vaiue			Cilits	Z	Quanner	
Total Dissolved Solids		TDS	46	5.0	10	mg/L	<u> </u>	Quanner	

## Analysis Method: SM2540D

Sample Name Ou	ntfall009_20181207_	Comp	Matrix Ty	pe: W ]	Result Typ	e: TRG		
Lab Sample Name:	440-226822-1	Sample Date/Time:	12/07/2018	09:00		Validati	on Level: 8	
Analyte	CAS N	o Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Total Suspended Solids	TSS	14	2.5	5.0	mg/L			
Analysis Mea	thod: SM45	500-CN-E						
Sample Name Ou	ntfall009_20181207_	Comp	Matrix Ty	pe: W ]	Result Typ	e: TRG		
Lab Sample Name:	440-226822-1	Sample Date/Time:	12/07/2018	09:00		Validati	on Level: 8	
Analyte	CAS N	o Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
Cyanide, Total	57-12-5		2.5	5.0	ug/L	U	U	

Thursday, January 17, 2019 Page 3 of 3



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226822-1

Client Project/Site: Semiannual Outfall 009 Comp

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli Patel

Authorized for release by: 12/28/2018 5:12:58 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

----- LINKS -----

Review your project results through
Total Access

**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Usli fatel

Urvashi Patel Manager of Project Management 12/28/2018 5:12:58 PM

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

Lab Sample ID	Client Sample ID	Matrix	Collected Received
440-226822-1	Outfall009_20181207_Comp	Water	12/07/18 09:00 12/07/18 21:05
440-226822-2	Outfall009_20181207_Comp_F	Water	12/07/18 09:00 12/07/18 21:05

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

Job ID: 440-226822-1

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226822-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.1° C, 2.6° C and 4.1° C.

### **Receipt Exceptions**

The reference method requires samples to be preserved to a pH <2. The following samples were received with insufficient preservation at a pH of 7: Outfall009_20181207_Comp (440-226822-1), Outfall009_20181207_Comp (440-226822-1[MS]) and Outfall009_20181207_Comp (440-226822-1[MSD]). The samples were preserved with 10mL of nitric acid reagent #1598157, at 16:00 to reach the appropriate pH of 2 in the laboratory for Radiologicals.

#### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method(s) FILTRATION: The following samples requested dissolved metals and were not filtered in the field: Outfall009_20181207_Comp_F (440-226822-2), Outfall009_20181207_Comp_F (440-226822-2[MS]) and Outfall009_20181207_Comp_F (440-226822-2[MSD]). These samples were filtered and preserved upon receipt to the laboratory.

Method(s) 200.8: The matrix spike (MS) recoveries of Thallium for preparation batch 440-516211 and analytical batch 440-516401 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### **General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009 20181207 Comp

Date Collected: 12/07/18 09:00 Date Received: 12/07/18 21:05

Lab Sample ID: 440-226822-1

**Matrix: Water** 

TestAmerica Job ID: 440-226822-1

Method: 300.0 - Anions, Ion Analyte		ı <mark>phy</mark> Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.5		0.50		mg/L	— <u> </u>		12/08/18 11:04	
Nitrate as N	0.96		0.11	0.055	J			12/08/18 11:04	1
Nitrite as N	ND		0.15	0.025	-			12/08/18 11:04	1
Sulfate	2.7		0.50		mg/L			12/08/18 11:04	1
_ Method: 314.0 - Perchlorate	e (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/11/18 10:06	1
- Method: NO3NO2 Calc - Nit	rogen, Nitrate	-Nitrite							
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.96		0.15	0.055	mg/L			12/18/18 14:50	1
- Method: 200.7 Rev 4.4 - Me	tals (ICP) - Tot	tal Recovera	ıble						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/11/18 07:57	12/11/18 16:02	1
Zinc	ND		20	12	ug/L		12/11/18 07:57	12/11/18 16:02	1
- Method: 200.8 - Metals (ICP	/MS) - Total R	ecoverable							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/11/18 07:54	12/11/18 19:02	1
Cadmium	ND		1.0	0.25	ug/L		12/11/18 07:54	12/11/18 19:02	1
Copper	4.5		2.0	0.50	ug/L		12/11/18 07:54	12/11/18 19:02	1
Lead	2.5		1.0	0.50	ug/L		12/11/18 07:54	12/11/18 19:02	1
Antimony	ND		2.0	0.50	ug/L		12/11/18 07:54	12/11/18 19:02	1
Selenium	0.57	J,DX	2.0	0.50	ug/L		12/11/18 07:54	12/11/18 19:02	1
Thallium -	ND		1.0	0.50	ug/L		12/11/18 07:54	12/11/18 19:02	1
- Method: 245.1 - Mercury (C	VAA)								
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/13/18 13:26	12/13/18 21:54	1
General Chemistry									
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	46		10	5.0	mg/L			12/11/18 14:10	1
Total Suspended Solids	14		5.0		mg/L			12/14/18 08:46	1
Cyanide, Total	ND		5.0	0.5	ug/L		10/10/10 10 01	12/13/18 21:19	1

Client Sample ID: Outfall009_20181207_Comp_F

Date Collected: 12/07/18 09:00	Matrix: Water
Date Received: 12/07/18 21:05	
_	

Method: 200.7 Rev 4.	.4 - Metals (ICP) - Diss	solved							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/12/18 13:13	12/12/18 17:45	1
Zinc	ND		20	12	ug/L		12/12/18 13:13	12/12/18 17:45	1
Method: 200.8 - Meta Analyte	•	ed Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:49	1
Cadmium	ND		1.0	0.25	ug/L		12/12/18 09:45	12/12/18 14:49	1

TestAmerica Irvine

Lab Sample ID: 440-226822-2

## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

Lab Sample ID: 440-226822-2

**Matrix: Water** 

Client Sample ID: Outfall009	20181207	Comp_F
Date Collected: 12/07/18 09:00		

Date Received: 12/07/18 21:05

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.8		2.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:49	1
Lead	0.62	J,DX	1.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:49	1
Antimony	0.69	J,DX	2.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:49	1
Selenium	ND		2.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:49	1
Thallium	ND		1.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:49	1
- Method: 245.1 - Merc	ury (CVAA) - Dissolv	/ed							
Analyte	• · · · · · · · · · · · · · · · · · · ·	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

Mercury ND 0.20 0.10 ug/L <u>12/13/18 13:30</u> <u>12/13/18 21:40</u>

## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
IO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
00.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
8.00	Metals (ICP/MS)	EPA	TAL IRV
45.1	Mercury (CVAA)	EPA	TAL IRV
M 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
M 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
M 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
PA	Bioassay	EPA	ABC
00.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
45.1	Preparation, Mercury	EPA	TAL IRV
istill/CN	Distillation, Cyanide	None	TAL IRV
ILTRATION	Sample Filtration	None	TAL IRV

#### Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

### **Laboratory References:**

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TestAmerica Irvine

### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Date Collected: 12/07/18 09:00

Date Received: 12/07/18 21:05

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009 20181207 Comp

TestAmerica Job ID: 440-226822-1

Lab Sample ID: 440-226822-1

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			515764	12/08/18 11:04	OH1	TAL IRV
Total/NA	Analysis	300.0		1			515765	12/08/18 11:04	OH1	TAL IRV
Total/NA	Analysis	314.0		1			516202	12/11/18 10:06	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			517959	12/18/18 14:50	TLN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	516212	12/11/18 07:57	KE	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			516364	12/11/18 16:02	P1R	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	516211	12/11/18 07:54	KE	TAL IRV
Total Recoverable	Analysis	200.8		1			516401	12/11/18 19:02	P1R	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	516687	12/13/18 13:26	DB	TAL IRV
Total/NA	Analysis	245.1		1			517219	12/13/18 21:54	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	516331	12/11/18 14:10	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	517087	12/14/18 08:46	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	516993	12/13/18 19:24	QTN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			517015	12/13/18 21:19	QTN	TAL IRV

Client Sample ID: Outfall009_20181207_Comp_F

Date Collected: 12/07/18 09:00

Date Received: 12/07/18 21:05

Lab Sample ID: 440-226822-2

**Matrix: Water** 

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	515802	12/08/18 16:39	KE	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	516574	12/12/18 13:13	KE	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			516674	12/12/18 17:45	P1R	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	515802	12/08/18 16:39	KE	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	516493	12/12/18 09:45	KE	TAL IRV
Dissolved	Analysis	200.8		1			516625	12/12/18 14:49	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	515802	12/08/18 16:39	KE	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	516702	12/13/18 13:30	DB	TAL IRV
Dissolved	Analysis	245.1		1			517219	12/13/18 21:40	DB	TAL IRV

### **Laboratory References:**

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Outfall009_20181207_Comp

Client Sample ID: Outfall009_20181207_Comp

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

**Prep Type: Total/NA** 

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Outfall009_20181207_Comp

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Lab Sample ID: MB 440-515764/6

Method: 300.0 - Anions, Ion Chromatography

**Matrix: Water** 

Analyte

Nitrate as N

Nitrite as N

Analysis Batch: 515764

**Client Sample ID: Method Blank Prep Type: Total/NA** 

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac ND 0.11 0.055 mg/L 12/08/18 10:50 0.025 mg/L ND 0.15 12/08/18 10:50

Lab Sample ID: LCS 440-515764/5

**Matrix: Water** 

**Analysis Batch: 515764** 

•	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	 1.13	1.15		mg/L		102	90 - 110	
Nitrite as N	1.52	1.50		mg/L		99	90 - 110	

Lab Sample ID: 440-226822-1 MS

**Matrix: Water** 

Analysis Batch: 515764

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	0.96		1.13	2.19		mg/L		108	80 - 120	
Nitrite as N	ND		1.52	1.56		mg/L		102	80 - 120	

Lab Sample ID: 440-226822-1 MSD

**Matrix: Water** 

**Analysis Batch: 515764** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Nitrate as N	0.96		1.13	2.21		mg/L		110	80 - 120	1	20	
Nitrite as N	ND		1.52	1.58		mg/L		104	80 - 120	1	20	

Lab Sample ID: MB 440-515765/6

**Matrix: Water** 

Analysis Batch: 515765

	MB I	MR							
Analyte	Result (	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/08/18 10:50	1
Sulfate	ND		0.50	0.25	ma/l			12/08/18 10:50	1

Lab Sample ID: LCS 440-515765/5

**Matrix: Water** 

Analysis Ratch: 515765

Alialysis Dalcii. 313703								
-	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	 5.00	4.96		mg/L		99	90 - 110	_
Sulfate	5.00	4 77		ma/l		95	00 110	

Lab Sample ID: 440-226822-1 MS

**Matrix: Water** 

Analysis Batch: 515765										
-	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	2.5		5.00	7.59		mg/L		103	80 - 120	

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**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp **Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 515765** 

MS MS Sample Sample Spike %Rec. **Result Qualifier** Added Result Qualifier Unit Analyte D %Rec Limits Sulfate 2.7 5.00 7.76 101 80 - 120 mg/L

Lab Sample ID: 440-226822-1 MSD Client Sample ID: Outfall009_20181207_Comp Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 515765

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	2.5		5.00	7.66		mg/L		104	80 - 120	1	20
Sulfate	2.7		5.00	7.83		mg/L		102	80 - 120	1	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-516202/6 **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 516202** 

MB MB Analyte Result Qualifier **MDL** Unit Dil Fac Prepared Analyzed Perchlorate ND 4.0 0.95 ug/L 12/11/18 09:26

Lab Sample ID: LCS 440-516202/5

**Matrix: Water** 

**Analysis Batch: 516202** 

		Spike	LCS	LCS				%Rec.	
Analyte		Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate		25.0	28.1		ug/L	_	112	85 - 115	

Lab Sample ID: MRL 440-516202/4 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 516202

	Spike	MRL MRL			%Rec.	
Analyte	Added	Result Qualifier	Unit D	%Rec	Limits	
Perchlorate	1.00	1.14 J,DX	ug/L	114	75 - 125	

Client Sample ID: Outfall009_20181207_Comp Lab Sample ID: 440-226822-1 MS Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 516202

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	ND		25.0	28.2		ua/l		113	80 120	 

Client Sample ID: Outfall009_20181207_Comp Lab Sample ID: 440-226822-1 MSD Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 516202

Allalysis Datell. 510202												
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Perchlorate	ND		25.0	28.2		ug/L		113	80 - 120	0	15	

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-516212/1-A

**Matrix: Water** 

Analysis Batch: 516364

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 516212** 

-	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/11/18 07:57	12/11/18 15:25	1
Zinc	ND		20	12	ug/L		12/11/18 07:57	12/11/18 15:25	1

Lab Sample ID: LCS 440-516212/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total Recoverable Analysis Batch: 516364 Prep Batch: 516212** LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits ug/L Nickel 500 498 100 85 - 115 Zinc 500 501 ug/L 100 85 - 115

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp **Matrix: Water Prep Type: Total Recoverable** Analysis Batch: 516364 **Prep Batch: 516212** MS MS Sample Sample Spike %Rec. Analyte Result Qualifier Added Result Qualifier %Rec Limits Unit Nickel ND 500 504 101 70 - 130 ug/L Zinc ND 500 513 70 - 130 ug/L 103

Lab Sample ID: 440-226822-1 MSD Client Sample ID: Outfall009_20181207_Comp **Matrix: Water Prep Type: Total Recoverable** Analysis Batch: 516364 **Prep Batch: 516212** Sample Sample Spike MSD MSD %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit 500 Nickel ND 501 ug/L 100 70 - 130 20

Lab Sample ID: MB 440-515802/1-F **Client Sample ID: Method Blank Matrix: Water Prep Type: Dissolved** 

512

ug/L

102

70 - 130

**Prep Batch: 516574** 

500

ND

Zinc

Analysis Batch: 516674

MR MR Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Nickel  $\overline{\mathsf{ND}}$ 10 5.0 ug/L <u>12/12/18 13:13</u> <u>12/12/18 17:40</u> Zinc ND 20 12 ug/L 12/12/18 13:13 12/12/18 17:40

Lab Sample ID: LCS 440-515802/2-F **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved** Analysis Batch: 516674 Prep Batch: 516574 Spike LCS LCS %Rec. Added **Analyte** Result Qualifier %Rec Limits Unit D Nickel 500 489 ug/L 98 85 - 115 Zinc 500 486 97 85 - 115 ug/L

Lab Sample ID: 440-226822-2 MS Client Sample ID: Outfall009_20181207_Comp_F **Matrix: Water Prep Type: Dissolved Prep Batch: 516574 Analysis Batch: 516674** Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits 500 Nickel ND 477 ug/L 95 70 - 130

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TestAmerica Job ID: 440-226822-1

70 - 130

95

**Prep Batch: 516574** 

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

**Analysis Batch: 516674** 

Zinc

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

ND

Lab Sample ID: 440-226822-2 MS Client Sample ID: Outfall009_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

MS MS Sample Sample Spike %Rec. Result Qualifier Added Analyte Result Qualifier Unit %Rec Limits

500

Lab Sample ID: 440-226822-2 MSD Client Sample ID: Outfall009_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

476

ua/L

Analysis Batch: 516674 **Prep Batch: 516574** Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Analyte

470 ND 500 94 20 Nickel ug/L 70 - 130 ND 500 472 70 - 130 20 Zinc ug/L 94

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-516211/1-A **Client Sample ID: Method Blank Matrix: Water Prep Type: Total Recoverable** 

**Analysis Batch: 516401 Prep Batch: 516211** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac ND 1.0 12/11/18 07:54 12/11/18 17:51 Silver 0.50 ug/L Cadmium ND 1.0 0.25 ug/L 12/11/18 07:54 12/11/18 17:51 Copper ND 2.0 0.50 ug/L 12/11/18 07:54 12/11/18 17:51 Lead ND 1.0 0.50 ug/L 12/11/18 07:54 12/11/18 17:51 ND 2.0 0.50 ug/L 12/11/18 07:54 12/11/18 17:51 Antimony Selenium ND 2.0 0.50 ug/L 12/11/18 07:54 12/11/18 17:51 Thallium ND 1.0 0.50 ug/L 12/11/18 07:54 12/11/18 17:51

Lab Sample ID: LCS 440-516211/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total Recoverable Analysis Batch: 516401 Prep Batch: 516211** 

	<b>Бріке</b>	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	80.0	75.7	-	ug/L		95	85 - 115	
Cadmium	80.0	75.7		ug/L		95	85 - 115	
Copper	80.0	77.8		ug/L		97	85 - 115	
Lead	80.0	76.6		ug/L		96	85 - 115	
Antimony	80.0	87.8		ug/L		110	85 - 115	
Selenium	80.0	85.2		ug/L		106	85 - 115	
Thallium	80.0	71.2		ua/L		89	85 - 115	

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp **Matrix: Water Prep Type: Total Recoverable** 

Analysis Batch: 516401 **Prep Batch: 516211** 

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	ND		80.0	71.5		ug/L		89	70 - 130	
Cadmium	ND		80.0	74.3		ug/L		93	70 - 130	
Copper	4.5		80.0	79.7		ug/L		94	70 - 130	
Lead	2.5		80.0	77.3		ug/L		94	70 - 130	
Antimony	ND		80.0	83.2		ug/L		104	70 - 130	
Selenium	0.57	J,DX	80.0	78.6		ug/L		98	70 - 130	

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TestAmerica Job ID: 440-226822-1

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp **Matrix: Water Prep Type: Total Recoverable Analysis Batch: 516401 Prep Batch: 516211** 

MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier Analyte Unit %Rec Limits Thallium  $\overline{\mathsf{ND}}$ 80.0 51.7 LN 65 70 - 130 ug/L

Lab Sample ID: 440-226822-1 MSD Client Sample ID: Outfall009_20181207_Comp

**Matrix: Water** 

**Prep Type: Total Recoverable** Analysis Batch: 516401 **Prep Batch: 516211** 

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	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	76.6		ug/L		96	70 - 130	7	20
Cadmium	ND		80.0	78.0		ug/L		98	70 - 130	5	20
Copper	4.5		80.0	84.7		ug/L		100	70 - 130	6	20
Lead	2.5		80.0	83.1		ug/L		101	70 - 130	7	20
Antimony	ND		80.0	87.6		ug/L		109	70 - 130	5	20
Selenium	0.57	J,DX	80.0	83.4		ug/L		104	70 - 130	6	20
Thallium	ND		80.0	58.4		ua/L		73	70 - 130	12	20

Lab Sample ID: MB 440-515802/1-E **Client Sample ID: Method Blank Prep Type: Dissolved** 

**Matrix: Water** 

**Prep Batch: 516493** Analysis Batch: 516625

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:44	1
Cadmium	ND		1.0	0.25	ug/L		12/12/18 09:45	12/12/18 14:44	1
Copper	ND		2.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:44	1
Lead	ND		1.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:44	1
Antimony	ND		2.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:44	1
Selenium	ND		2.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:44	1
Thallium	ND		1.0	0.50	ug/L		12/12/18 09:45	12/12/18 14:44	1

Lab Sample ID: LCS 440-515802/2-E **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved** 

**Analysis Batch: 516625 Prep Batch: 516493** Spike LCS LCS %Rec.

Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	80.0	77.0		ug/L		96	85 - 115	
Cadmium	80.0	77.8		ug/L		97	85 - 115	
Copper	80.0	78.5		ug/L		98	85 - 115	
Lead	80.0	79.4		ug/L		99	85 - 115	
Antimony	80.0	85.3		ug/L		107	85 - 115	
Selenium	80.0	76.6		ug/L		96	85 - 115	
Thallium	80.0	77.9		ug/L		97	85 - 115	

Lab Sample ID: 440-226822-2 MS Client Sample ID: Outfall009_20181207_Comp_F **Matrix: Water Prep Type: Dissolved** 

Copper

**Analysis Batch: 516625 Prep Batch: 516493** MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier Limits Analyte Unit D %Rec Silver ND 80.0 84.2 ug/L 105 70 - 130 Cadmium ND 80.0 83.7 ug/L 105 70 - 130

89.5

ug/L

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106

70 - 130

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80.0

4.8

12/28/2018

Client: Haley & Aldrich, Inc. TestAmerica Job ID: 440-226822-1

Project/Site: Semiannual Outfall 009 Comp

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-226822-2 MS Client Sample ID: Outfall009_20181207_Comp_F **Matrix: Water Prep Type: Dissolved Prep Batch: 516493 Analysis Batch: 516625** 

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Lead	0.62	J,DX	80.0	89.5		ug/L		111	70 - 130	
Antimony	0.69	J,DX	80.0	95.2		ug/L		118	70 - 130	
Selenium	ND		80.0	77.2		ug/L		97	70 - 130	
Thallium	ND		80.0	86.7		ug/L		108	70 - 130	

Client Sample ID: Outfall009_20181207_Comp_F Lab Sample ID: 440-226822-2 MSD **Matrix: Water Prep Type: Dissolved Analysis Batch: 516625 Prep Batch: 516493** MSD MSD Sample Sample Spike %Rec. **RPD** Result Qualifier Analyte Added Result Qualifier Unit %Rec Limits **RPD** Limit Silver ND 80.0 81.2 101 70 - 130 20 ug/L ND Cadmium 80.0 80.0 ug/L 100 70 - 130 5 20 Copper 4.8 80.0 86.6 ug/L 102 70 - 130 20 86.6 0.62 J,DX 80.0 107 70 - 130 20 Lead ug/L 3 0.69 J,DX 80.0 92.2 114 70 - 130 20 Antimony ug/L Selenium ND 80.0 75.2 94 70 - 130 20 ug/L 3

80.0

Method: 245.1 - Mercury (CVAA)

Thallium

Mercury

Lab Sample ID: MB 440-516687/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 517219** Prep Batch: 516687

84.6

ug/L

ug/L

106

101

75 - 125

70 - 130

MB MB

ND

ND

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.20 12/13/18 13:26 12/13/18 21:50 Mercury 0.10 ug/L

Lab Sample ID: LCS 440-516687/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 517219 **Prep Batch: 516687** LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits 8.00 8.34 104 85 - 115

Mercury ug/L Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 517219 Prep Batch: 516687** Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits

8.06

8.00

Lab Sample ID: 440-226822	Client Sample ID: Outfall009_20181207_Comp										
Matrix: Water						Prep Ty	pe: Tot	al/NA			
Analysis Batch: 517219									Prep Ba	itch: 51	16687
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.20	-	ug/L		103	75 - 125	2	20

20

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TestAmerica Job ID: 440-226822-1

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-515802/1-I Client Sample ID: Method Blank **Matrix: Water Prep Type: Dissolved Analysis Batch: 517219 Prep Batch: 516702** MB MB

Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac **Prepared** 0.20 <u>12/13/18 13:30</u> <u>12/13/18 21:36</u> ND 0.10 ug/L Mercury

Lab Sample ID: LCS 440-515802/2-I **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved Analysis Batch: 517219 Prep Batch: 516702** Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec 85 - 115

7.96

ug/L

100

8.00

Lab Sample ID: 440-226822-2 MS Client Sample ID: Outfall009_20181207_Comp_F **Matrix: Water Prep Type: Dissolved Analysis Batch: 517219 Prep Batch: 516702** Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Limits Analyte Unit D %Rec Mercury ND 8.00 7.94 ug/L 99 75 - 125

Client Sample ID: Outfall009_20181207_Comp_F Lab Sample ID: 440-226822-2 MSD **Matrix: Water Prep Type: Dissolved Analysis Batch: 517219 Prep Batch: 516702** Sample Sample Spike MSD MSD %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Mercury  $\overline{\mathsf{ND}}$ 8.00 7.81 98 75 - 125 20 ug/L

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-516331/1 Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 516331** 

Mercury

MB MB Result Qualifier RL **MDL** Unit Dil Fac Analyte Prepared Analyzed 10 Total Dissolved Solids 12/11/18 14:10  $\overline{\mathsf{ND}}$ 5.0 mg/L

Lab Sample ID: LCS 440-516331/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 516331

Spike LCS LCS %Rec. Result Qualifier Added Analyte Unit %Rec Limits **Total Dissolved Solids** 1000 978 mg/L 98 90 - 110

Lab Sample ID: 440-226959-Y-1 DU **Client Sample ID: Duplicate Matrix: Water** Prep Type: Total/NA

Analysis Batch: 516331

Sample Sample DU DU **RPD** Analyte Result Qualifier Result Qualifier Unit D **RPD** Limit **Total Dissolved Solids** 300 289 mg/L

TestAmerica Job ID: 440-226822-1

Client: Haley & Aldrich, Inc.

Lab Sample ID: MB 440-517087/1

Project/Site: Semiannual Outfall 009 Comp

Method: SM 2540D - Solids, Total Suspended (TSS)

Client Sample ID: Method Blank Prep Type: Total/NA

**Prep Batch: 516993** 

**Prep Batch: 516993** 

**Matrix: Water** 

**Analysis Batch: 517087** 

MB MB

Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac Prepared 1.0 Total Suspended Solids ND 0.50 mg/L 12/14/18 08:46

Lab Sample ID: LCS 440-517087/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 517087** 

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec **Total Suspended Solids** 1000 1050 mg/L 105 85 - 115

Lab Sample ID: 440-226830-V-1 DU **Client Sample ID: Duplicate Prep Type: Total/NA** 

**Matrix: Water** 

Analysis Batch: 517087

Sample Sample DU DU **RPD** RPD Result Qualifier Result Qualifier Limit Analyte Unit D

**Total Suspended Solids** 750 815 mg/L

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-516993/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 517015** 

MR MR

Result Qualifier RL **MDL** Unit Analyte Prepared Analyzed Cyanide, Total ND 5.0 2.5 ua/L <u>12/13/18 19:24</u> <u>12/13/18 21:18</u>

Lab Sample ID: LCS 440-516993/2-A Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 517015** LCS LCS Spike

%Rec. %Rec Added Result Qualifier Limits Analyte Unit

Cyanide, Total 100 102 102 90 - 110 ug/L Lab Sample ID: LCSD 440-516993/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Water** Prep Type: Total/NA **Analysis Batch: 517015 Prep Batch: 516993** Spike LCSD LCSD %Rec. **RPD** 

Added Result Qualifier RPD Analyte Unit %Rec Limits Limit Cyanide, Total 100 104 104 2 ug/L 90 - 110

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 517015 Prep Batch: 516993** Sample Sample Spike MS MS %Rec.

Added Analyte Result Qualifier Result Qualifier Unit D %Rec Limits Cyanide, Total ND 100 108 ug/L 108 70 - 115

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## **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-226822-1 MSD Client Sample ID: Outfall009_20181207_Comp **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 517015 Prep Batch: 516993** Sample Sample Spike MSD MSD %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit ND 100 107 107 70 - 115 1 15 Cyanide, Total ug/L

3

4

5

0

8

10

11

13

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

## HPLC/IC

## Analysis Batch: 515764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	300.0	
MB 440-515764/6	Method Blank	Total/NA	Water	300.0	
LCS 440-515764/5	Lab Control Sample	Total/NA	Water	300.0	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	300.0	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	300.0	

## **Analysis Batch: 515765**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	300.0	
MB 440-515765/6	Method Blank	Total/NA	Water	300.0	
LCS 440-515765/5	Lab Control Sample	Total/NA	Water	300.0	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	300.0	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	300.0	

## **Analysis Batch: 516202**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	314.0	
MB 440-516202/6	Method Blank	Total/NA	Water	314.0	
LCS 440-516202/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-516202/4	Lab Control Sample	Total/NA	Water	314.0	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	314.0	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	314.0	

## **Analysis Batch: 517959**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	NO3NO2 Calc	

### **Metals**

### Filtration Batch: 515802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-2	Outfall009_20181207_Comp_F	Dissolved	Water	FILTRATION	-
MB 440-515802/1-E	Method Blank	Dissolved	Water	FILTRATION	
MB 440-515802/1-F	Method Blank	Dissolved	Water	FILTRATION	
MB 440-515802/1-I	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-515802/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-515802/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-515802/2-I	Lab Control Sample	Dissolved	Water	FILTRATION	
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	FILTRATION	
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	FILTRATION	

## **Prep Batch: 516211**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total Recoverable	Water	200.2	
MB 440-516211/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-516211/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-226822-1 MS	Outfall009_20181207_Comp	Total Recoverable	Water	200.2	
440-226822-1 MSD	Outfall009_20181207_Comp	Total Recoverable	Water	200.2	

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Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

## **Metals (Continued)**

## **Prep Batch: 516212**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total Recoverable	Water	200.2	
MB 440-516212/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-516212/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-226822-1 MS	Outfall009_20181207_Comp	Total Recoverable	Water	200.2	
440-226822-1 MSD	Outfall009_20181207_Comp	Total Recoverable	Water	200.2	

## Analysis Batch: 516364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	516212
MB 440-516212/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	516212
LCS 440-516212/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	516212
440-226822-1 MS	Outfall009_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	516212
440-226822-1 MSD	Outfall009_20181207_Comp	Total Recoverable	Water	200.7 Rev 4.4	516212

## **Analysis Batch: 516401**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total Recoverable	Water	200.8	516211
MB 440-516211/1-A	Method Blank	Total Recoverable	Water	200.8	516211
LCS 440-516211/2-A	Lab Control Sample	Total Recoverable	Water	200.8	516211
440-226822-1 MS	Outfall009_20181207_Comp	Total Recoverable	Water	200.8	516211
440-226822-1 MSD	Outfall009_20181207_Comp	Total Recoverable	Water	200.8	516211

### **Prep Batch: 516493**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-2	Outfall009_20181207_Comp_F	Dissolved	Water	200.2	515802
MB 440-515802/1-E	Method Blank	Dissolved	Water	200.2	515802
LCS 440-515802/2-E	Lab Control Sample	Dissolved	Water	200.2	515802
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	200.2	515802
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	200.2	515802

## **Prep Batch: 516574**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-2	Outfall009_20181207_Comp_F	Dissolved	Water	200.2	515802
MB 440-515802/1-F	Method Blank	Dissolved	Water	200.2	515802
LCS 440-515802/2-F	Lab Control Sample	Dissolved	Water	200.2	515802
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	200.2	515802
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	200.2	515802

## **Analysis Batch: 516625**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-2	Outfall009_20181207_Comp_F	Dissolved	Water	200.8	516493
MB 440-515802/1-E	Method Blank	Dissolved	Water	200.8	516493
LCS 440-515802/2-E	Lab Control Sample	Dissolved	Water	200.8	516493
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	200.8	516493
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	200.8	516493

## **Analysis Batch: 516674**

Lab Sample ID 440-226822-2	Client Sample ID Outfall009_20181207_Comp_F	Prep Type  Dissolved	Matrix Water	Method 200.7 Rev 4.4	Prep Batch 516574
MB 440-515802/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	516574
LCS 440-515802/2-F	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	516574

TestAmerica Irvine

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226822-1 Project/Site: Semiannual Outfall 009 Comp

## **Metals (Continued)**

### **Analysis Batch: 516674 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	200.7 Rev 4.4	516574
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	200.7 Rev 4.4	516574

### **Prep Batch: 516687**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	245.1	
MB 440-516687/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-516687/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	245.1	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	245.1	

## **Prep Batch: 516702**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-2	Outfall009_20181207_Comp_F	Dissolved	Water	245.1	515802
MB 440-515802/1-I	Method Blank	Dissolved	Water	245.1	515802
LCS 440-515802/2-I	Lab Control Sample	Dissolved	Water	245.1	515802
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	245.1	515802
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	245.1	515802

## **Analysis Batch: 517219**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	245.1	516687
440-226822-2	Outfall009_20181207_Comp_F	Dissolved	Water	245.1	516702
MB 440-515802/1-I	Method Blank	Dissolved	Water	245.1	516702
MB 440-516687/1-A	Method Blank	Total/NA	Water	245.1	516687
LCS 440-515802/2-I	Lab Control Sample	Dissolved	Water	245.1	516702
LCS 440-516687/2-A	Lab Control Sample	Total/NA	Water	245.1	516687
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	245.1	516687
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	245.1	516687
440-226822-2 MS	Outfall009_20181207_Comp_F	Dissolved	Water	245.1	516702
440-226822-2 MSD	Outfall009_20181207_Comp_F	Dissolved	Water	245.1	516702

## **General Chemistry**

## **Analysis Batch: 516331**

Lab Sample ID 440-226822-1	Client Sample ID Outfall009_20181207_Comp	Prep Type Total/NA	Matrix Water	Method SM 2540C	Prep Batch
MB 440-516331/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-516331/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-226959-Y-1 DU	Duplicate	Total/NA	Water	SM 2540C	

## **Prep Batch: 516993**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	Distill/CN	_
MB 440-516993/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-516993/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-516993/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	Distill/CN	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	Distill/CN	

TestAmerica Irvine

12/28/2018

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## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

## **General Chemistry (Continued)**

## **Analysis Batch: 517015**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	SM 4500 CN E	516993
MB 440-516993/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	516993
LCS 440-516993/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	516993
LCSD 440-516993/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	516993
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	SM 4500 CN E	516993
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	SM 4500 CN E	516993

## **Analysis Batch: 517087**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	SM 2540D	
MB 440-517087/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-517087/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-226830-V-1 DU	Duplicate	Total/NA	Water	SM 2540D	

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## **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-1

### **Qualifiers**

## **HPLC/IC**

Qualifier	Qualifier Description

J,DX Estimated value; value < lowest standard (MQL), but >than MDL

**Metals** 

Qualifier Qualifier Description

J,DX Estimated value; value < lowest standard (MQL), but >than MDL LN MS and/or MSD below acceptance limits. See Blank Spike (LCS)

## Glossary

Abbreviation	These commonly used	d abbreviations may o	or may not be present in	this report.
--------------	---------------------	-----------------------	--------------------------	--------------

Eisted under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MDA Minimum Detectable Activity (Radiochemistry)
MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

PQL Practical Quantitation Limit

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

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## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226822-1

Project/Site: Semiannual Outfall 009 Comp

## **Laboratory: TestAmerica Irvine**

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

AuthorityProgramEPA Region<br/>9Identification Number<br/>CA ELAP 2706Expiration Date<br/>06-30-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method Prep Method Matrix Analyte

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December 27, 2018

Ms. Urvashi Patel TestAmerica Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT:

TestAmerica Irvine

SAMPLE I.D.:

Outfall009_20181207_Comp (440-226822-1)

DATE RECEIVED:

7 Dec - 18

ABC LAB. NO.:

TAM1218.059

## CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

### TST RESULT

*GROWTH = PASS % EFFECT = 10.02 %

Yours yery truly,

Scott Johnson

Laboratory Director

12/28/2018

CETIS Summary Report						•	port Date: 26 Dec-18 12:24 (p 1 st Code: TAM1218.059sel   21-2844-			.,	
Selenastrum	Growth Test							Aquatic B	ioassay & C	onsulting	Labs, Inc.
Batch ID:	14-7319-5540	Test	Type: Ce	II Growth	ā		Anal	yst:			
Start Date:	07 Dec-18 17:22	Prote	ocol: EP	A/821/R-02-0	013 (2002)		Dilu	ent: Labo	oratory Wate	r	
Ending Date:	11 Dec-18 15:45	Spec	i <b>es</b> : Se	lenastrum ca	pricornutum		Brin	e: Not	Applicable		
Duration:	94h	Sour	ce: Aq	uatic Biosyst	ems, CO		Age:				
Sample ID:	01-5982-6897	Code	Code: TAM1218.059sel				Clie	nt: Test	America Irv	ine	
Sample Date:	: 07 Dec-18 09:00	Mate	Material: Sample Water					ect: Boei	ng NPDES	SSFL Outf	all 009 Com
Receipt Date:	: 07 Dec-18 16:50	Sour	ce: Bio	assay Repo	t						
Sample Age:	8h (2 °C)	Stati	on: Ou	tfall009_201	81207_Com	p (440-2268	322-				
Single Comp	arison Summary										
Analysis ID	Endpoint		Compari	son Method			P-Value	Comparis	on Result		
13-3496-2865	Cell Density		TST-Wel	ch's t Test			2.3E-04	100% passed cell density			
Test Accepta	bility					TAC L	imits				
Analysis ID	Endpoint		Attribute		Test Stat	Lower	Upper	Overlap	Decision		
13-3496-2865	Cell Density		Control C	V	0.06625	<<	0.2	Yes	Passes Cr	iteria	-
13-3496-2865	Cell Density		Control R	esp	1.15E+6	1000000	>>	Yes	Passes Cr	riteria	
Cell Density	Summary				5						
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.148E+6	1.085E+6	1.212E+6	1.044E+6	1.253E+6	2.690E+4	7.608E+4	6.62%	0.00%
100		8	1.033E+€	9.625E+5	1.104E+6	9.170E+5	1.174E+6	2.995E+4	8.472E+4	8.20%	10.02%
Cell Density	Detail	<u> </u>									
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
0	N	1.162E+6	1.252E+6	1.165E+6	1.253E+6	1.044E+6	1.075E+6	1.106E+6	1.131E+6		
100		9.440E+5	9.170E+5	1.174E+6	1.071E+6	1.018E+6	9.870E+5	1.102E+6	1.054E+6		

26 Dec-18 12:24 (p 1 of 2)

Test Code:

TAM1218.059sel | 21-2844-6945

							Test	Code:	TAM1218.	059sel   21	1-2844-6945	
Selenastrum	Growth Test							Aquatic Bi	oassay & C	onsulting	Labs, Inc.	
Analysis ID:	13-3496-2865	End	oint: Ce	ell Density			CETIS	S Version:	CETISv1.	9.2		
Analyzed:	12 Dec-18 9:07	' Anal	ysis: Pa	arametric Bioe	equivalence-	Two Sample	e Offici	Official Results: Yes				
Batch ID:	14-7319-5540	Test	Type: Ce	ell Growth			Analy	Analyst:				
Start Date:	07 Dec-18 17:22	2 Prote	ocol: EF	PA/821/R-02-0	013 (2002)		Dilue	nt: Labo	ratory Wate	r		
Ending Date:	11 Dec-18 15:45	5 Spec	ies: Se	elenastrum ca	pricornutum		Brine	: Not /	Applicable			
Duration:	94h Source: Aquatic Biosystems, CO					Age:						
Sample ID:	01-5982-6897	Code	e: T/	M1218.059s	el		Clien	t: Test	America Irv	ine		
Sample Date:	07 Dec-18 09:00	) Mate	rial: Sa	ample Water			Proje	ct: Boei	ng NPDES :	SSFL Outf	all 009 Com	
Receipt Date:	07 Dec-18 16:50	) Soui	ce: Bi	oassay Repoi	rt							
Sample Age:	8h (2 °C)	Stati	on: O	utfall009_201	81207_Com	p (440-2268	322-					
Data Transfor	rm	Alt Hyp			TST_b		Comparis	on Result				
Untransforme	d	C*b < T			0.75		100% pass	sed cell den	sity			
TST-Welch's	t Test											
Control	vs Control	II.	Test Sta	t Critical	DF	P-Type	P-Value	Decision(	a: <b>25</b> %)			
Negative Conf	trol 100*		4.763	0.6955	12	CDF	2.3E-04	Non-Signif	icant Effect			
Test Accepta	bility Criteria	TAC Li	mits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision			_				
Control CV	0.06625	<<	0.2	Yes	Passes Cr	iteria						
Control Resp	1.15E+6	1000000	>>	Yes	Passes Cr	iteria						
ANOVA Table	)											
Source	Sum Squ	ares	Mean So	quare	DF	F Stat	P-Value	Decision(	α:5%)			
Between	5.302E+1	0	5.302E+	10	1	8.177	0.0126	Significant	Effect			
Error	9.077E+1		6.483E+	09	14							
Total	1.438E+1	1			15							
Distributiona	l Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(				
Variances		quality of Va			0.1142	8.862	0.7404	Equal Vari	ances			
Variances		ne Equality of	of Variance	e Test	0.1139	8.862	0.7408	Equal Vari				
Variances		Ratio F Test			1.24	8.885	0.7839	Equal Vari				
Distribution		-Darling A2 N		Test	0.2232	3.878	0.8591	Normal Di				
Distribution	•	o Skewness			0.4268	2.576	0.6695	Normal Di				
Distribution	_	ov-Smirnov I			0.09583	0.2471	1.0000	Normal Di				
Distribution		Vilk W Norm	ality lest		0.965	0.8408	0.7524	Normal Di	stribution			
Cell Density	·											
Conc-%	Code	Count	Mean		95% UCL		Min	Max	Std Err	CV%	%Effect	
0 100	N	8		6 1.085E+6 6 9.625E+5			1.044E+6		2.690E+4		0.00%	
	D 4 "	U	1.03367	0 9.020E70	1.104670	1.030670	∂.170E+3	1.174=+0	2.880074	0.20%	10.02%	
Cell Density		D 1	B	D. 4	ъ.	<b>.</b> -		<b>.</b> -				
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
0	N			6 1.165E+6				1.106E+6				
100		9.440E+5	9.170E+	5 1.174E+6	1.U/1E+6	1.U18E+6	9.870±+5	1.702E+6	1.U54E+6			

Report Date:

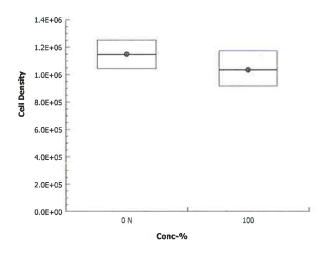
26 Dec-18 12:24 (p 2 of 2)

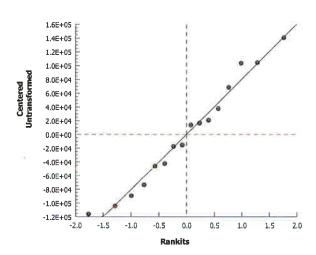
Test Code:

TAM1218.059sel | 21-2844-6945

Selenastrum Growth TestAquatic Bioassay & Consulting Labs, Inc.Analysis ID:13-3496-2865Endpoint:Cell DensityCETIS Version:CETIS V1.9.2Analyzed:12 Dec-18 9:07Analysis:Parametric Bioequivalence-Two SampleOfficial Results:Yes

### Graphics





26 Dec-18 12:24 (p 1 of 2)

Test Code:

TAM1218.059sel | 21-2844-6945

Selenastrum	Growth Test							Aqua	tic Bioassay &	Consulting	g Labs, Inc.
Batch ID: Start Date: Ending Date: Duration:	14-7319-5540 07 Dec-18 17:2 11 Dec-18 15:4 94h	2 5	Test Type: Protocol: Species: Source:	Cell Growth EPA/821/R-02 Selenastrum c Aquatic Biosys	apricornutur	n		Analyst: Diluent: Brine: Age:	Laboratory Wa Not Applicable	ter	
	01-5982-6897 07 Dec-18 09:0 07 Dec-18 16:5 8h (2 °C)	0	Code: Material: Source: Station:	TAM1218.059s Sample Water Bioassay Repo Outfall009_20	ort	np (440	-226822-	Client: Project:	Test America I Boeing NPDES		fall 009 Com
Alkalinity (Ca	CO3)-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	30			30	30	0	0	0.0%	0
Overall		2	49	-192.4	290.4	30	68	19	26.87	54.84%	0 (0%)
Conductivity	·µmhos										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	447.2	402.7	491.7	420	493	16.01		8.01%	0
100		5	103.8	45.15	162.5	68	158	21.12		45.51%	0
Overall		10	275.5	143	408	68	493	58.58	185.3	67.24%	0 (0%)
Hardness (Ca	aCO3)-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	1	110	0070		110	110	0	0	0.0%	0
100		1	50			50	50	0	0	0.0%	0
Overall		2	80	-301.2	461.2	50	110	30	42.43	53.03%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	7.56	7.393	7.727	7.4	7.7	0.06	0.1342	1.78%	0
100		5	7.46	7.318	7.602	7.3	7.6	0.050		1.53%	0
Overall		10	7.51	7.418	7.602	7.3	7.7	0.040		1.71%	0 (0%)
Temperature	-°C				7						
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	N	5	25.04	24.83	25.25	24.8	25.2			0.67%	0
100		5	25.04	24.83	25.25	24.8	25.2	0.074	84 0.1673	0.67%	0
Overall		10	25.04	24.93	25.15	24.8	25.2	0.049	89 0.1578	0.63%	0 (0%)

Analyst: QA:

## **CETIS Measurement Report**

Report Date:

26 Dec-18 12:24 (p 2 of 2)

Test Code:

TAM1218.059sel | 21-2844-6945

Selenastrum C	Growth Test						Aquatic Bioassay & Consulting Labs, Inc.
Alkalinity (CaC	O3)-mg/L						
Conc-%	Code	1					
0	N	68					
100		30					
Conductivity-	ımhos						
Conc-%	Code	1	2	3	4	5	
0	N	420	420	424	479	493	
100		68	70	70	153	158	
Hardness (Ca	CO3)-mg/L						
Conc-%	Code	1					
0	N	110					
100		50		_		(+)	
pH-Units							
Conc-%	Code	1	2	3	4	5	
0	N	7.4	7.5	7.5	7.7	7.7	
100		7.3	7.4	7.5	7.5	7.6	
Temperature-°	C						
Conc-%	Code	1	2	3	4	5	
0	N	25.2	25	25	24.8	25.2	
100		25.2	25	25	24.8	25.2	

Analyst: ____QA:___

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TestAmerica Irvine

17461 Derian Ave Suite 100















**Chain of Custody Record** 



1/461 Derian Ave Sure 100	(	inain o	or Cus	tody r	(e	COI	ra				11		HINE						100			ADED		HENTAL TE	SEVO
Irvine, CA 92614-5817 Phone (949) 261-1022 Fax (949) 260-3297																					7941-28	MEDS-M. 156	ENRINGE	WEST AL .	31.40
Client Information (Sub Contract Lab)	Sampler;			Lab Pat		rvasl	ni						ľ	Carrie	r Tra	cking	No(s)	¢:			COC No. 440-13				
Client Contact:	Phone:			E-M		7245	-	202022		3•E-0200					of Or						Page:	of 1			
Shipping/Receiving				urva				stam				_		Call	omia	_			_		Page 1 Job#:	Q1 I	_		
Company:								Requi													440-22	6822-1			
Aquatic Bioassay	Due Date Reques	led:			1-	10 1	ogii		Odin	OTTILO		_	_				-			_		ration Co	odes:		
Address: 29 North Olive Street,	12/19/2018				L.	CIRALIT	_	-		An	alys	is F	leq	ues	ted	_	_	_	_	ines:	A-HCL		M-H		
City: Ventura	TAT Requested (c	lays):					Ę														B - NaO C - Zn A	celate		NaO2	
State, Zip:	1						St.	- 1		- 1	- 1									11013	D - Nitrio			2045 2803	
CA, 93001					13		ig		- 1										i i	100	F - MeO		R-N	28203	
Phone:	PO #:				6		No-Se		-												G - Amo H - Asco	chlor orbic Acid		P Dodecahy	ydrate
Email:	WO#:				S Or N	(ON	Irum)/ Chronic-Selenestrum													816	I - Ice J - DIW K - EDT		U - A V - M W - p		
Project Name:	Project #:				ြနို	0	Ê					- 1		- 1						alne	L-EDA			ner (specify)	
Semiannual Outfall 009 Comp Site:	44009879 SSOW#:				븁	MS/MS/D (Yes	nest						- 1	١						containers	Other:				
Sile.					Sar	MSD	SUB (Chronic-Sele						- 1							r of					_
			Sample	Matrix	ored	ŝ	읃						- 1							Total Number					
72.1	1		Type	(W=water,	E	Perform	ě l		- 1		- 1	1	- 1							N					
		Sample	(C=comp,	3=solid. O=waste/oil,	Pie	2	9	-		- 1			- 1							otal	١.,			·	
Sample Identification - Client ID (Lab ID)	Sample Date	Time	Annual Superior and the	OT-Tissue, A-Air	川		20	7000	Salvan	0.0021	1527001	0000	9/6	1003	100	ana a	5590	295562	No see	5	Proposition in the	peciai	nstruc	ions/Note	A STATE OF THE PARTY.
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Note: Since laboratory accreditations are subject to change, TestAmerica Labor currently maintain accreditation in the State of Origin listed above for analysis/te	sts/matrix being ana	lyzed. the sam:	oles must be s	anticiped back to	o me	I esta:	nenc	a iabo	iraton	y or ou	ner ma	strucus	NED M	ill be	s san provi	ded.	прпе Апу с	hange	s to a	accre	ditation st	atus shou	ild be bro	ught to Test	America
Laboratories, Inc. attention immediately. If all requested accreditations are curre	ent to date, return the	signed Chain	of Custody at	testing to said	comp	licanc	e to T	TestAn	nerica	Labo	ratorie	s, Inc													
Possible Hazard Identification						Sam	ple	Disp	osa	(A	fee n	nay L	e as	sses	sed	if sa	mpi	es ar	e re	taln	ed long	er than	1 mon	th)	
Unconfirmed						-	-¹R€	eturn	To	Client	£		-J _{Di}	spos	sal B	y La	b		<u>_</u>	4rchi	ive For		M	onths	
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#### Test America

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N	eal			978.23	4.503	3, 818.599.0	702 (cel	l)	Total Recoverable Metals: (E200.7): Ni, Zn (E200.8): Ag, Cd, Cu, Pb, S	TCDD (and all congeners) (E1613B)	NO ₃ +NO ₂ -N, Perchlorate	TDS (SM2540C/E160,1)	Total Dissolved Metals: (E200,7): Ni, Zn (E200,8): Ag, Cd, Cu, Pb	Gross Alpha(E900.0), Gross Beta(E900.0), Tritium (H-3) (E906.0), Gr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E909.0), K-40, CS-137 (E901.0 or E901.1)	Cyanide (SM4500-CN-E /	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Recoverable Metals:	Dissolved Metals:	(160.2 (SM2540D))		
									. 2	(ar	SO ₄ ,	SW	Dis.	Alp ine ine 37 (1	ge de	[24]	Rec	Dis	190		
Sample			Sample		# of	Preservative	Bottle #	MS/MSD	2 2 2 a	5	CI, S	SS (	2002 al	omitium omitium adu	yani	PA	Total	Total	TSS		
Description	Sample I.D.	Sampling Date/Time	_	Container Type	Cont					F	ō	F	566	0 F O E O	0	0.6	Ĕ	Ĕ	F		
			WM	500 mL Poly	2	HNO ₃	95	Yes	X	X	-	-			-		_	-		-	
			WM	1 L Glass Amber 500 mL Poly	6	None	140	Yes		+^	X						-		-	_	48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	1	None	155	No	_	-	ı ^	X			-		-		_	-	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
			WM	500 mL Poly	3	NaOH	220	Yes		$\vdash$					х						
	Outfall009_20181207_Comp	12/7/2018	WM	2.5 Gal Cube	3	None	225	Yes													Unfiltered and unpreserved analysis, Separate RAD onto
		600	WM	1 L Glass Amber	3	None	230	Yes						X							another workorder. Analyze duplicate, not MS/MSD
Outfall 009		10900	WM	1 Gal Cube	6	None	235	No								х					Only test if first or second rain events of the year
			WM	homeilicale viole	-3	HNO ₃	315	783	华代	w							х				Sample receiving DO NOT OPEN BAG, Bag to be opened in Mercury Prep using clean procedures,
			WM	1 L Poly	1	None	185	- No		1									X		
	- 14 Hann Boundary C	12/7/2018	WM	1 L Poly	3	None	205	Yes					Х								Filter and preserve w/in 24hrs of receipt at lab
	Outfall009_20181207_Comp_F	12112010	WM	borosilicate vials	3	None	320	Yes										х			Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	Outfall009_20181207_Comp_Extra	12/7/2018/	WM	1 L Glass Amber	2	None	110	No		н		<u></u>									Hold
		194	WM	500 mL Poly	2	None	145	No			H.				_				_		Hold
										_											
								,													
			Compa				Received			-	ate/Tin							_	T.,	arrad tir	me: (Check)
Relinquished I	By Date/Time:	a	Compa	iny:			I I	i by	11	19	Adder I III	ne.			-			- 1			, ,
ml	D:1/12.7	18/1435 12.7.1	4	6/2 1	11	.21	Van	101	Veg	9	1	2-	7-18	14: 7-18 1	55	•					72 Hour: 10 Day:X 5 Day: Normal:
Relinguished I	By Date/Time:	/ / [ ] 3	Compa	any:	ary	100	Received	By	1	- 0	ate/Tin	ne:									
1	1/2-2	17-1	b	111	_		_	1.	1	2		597	1	7 (0)	1/	0	1	- 1	Sample	Integri	ty: (Check)
m	ce Vega	16.1.1	8 1	16.5	0		6	In	n	10	m	/	16-	1-10 1	0	<i>کار</i>	ノ		Intact:		On Ice:
Kelinquished I			Compa				Received	l By		A	ate	ne:						_	Store s	amples	for 6 months,
																			Data Re	equirem	nents: (Check)
							1											- 1			



### CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE:

6 December - 2018

STANDARD TOXICANT: Cadmium Chloride

NOEC =

<10.00 ug/l

IC25 =

67.99 ug/l

IC50 =

>140.00 ug/l

Yours very truly,

Scott Johnson

Laboratory Director

21 Dec-18 10:17 (p 1 of 1)

Test Code:

SEL120618 | 20-7096-1293

						Test	Code:	SEL1	20618   20-	7096-12	:93
Selenastrum	Growth Test						Aquatic Bi	oassay & C	onsulting L	.abs, In	c.
Batch ID: Start Date: Ending Date: Duration:	07-4374-8636 06 Dec-18 13:04 10 Dec-18 12:30 95h	Test Type: Protocol: Species: Source:	Cell Growth EPA/821/R-02-0 Selenastrum ca Aquatic Biosyste	pricornutum	V	Analy Dilue Brine Age:	nt: Labo	ratory Wate Applicable	r		_
Sample ID: Sample Date: Receipt Date: Sample Age:		Code: Material: Source: Station:	SEL120618 Cadmium chlori Reference Toxio REF TOX	2.0		Clien Proje		nal Lab			
Multiple Com	parison Summary										
Analysis ID	Endpoint	Com	parison Method			NOEL	LOEL	TOEL	TU	PMSD	$\checkmark$
04-1574-4117	Cell Density	Dunn	ett Multiple Comp	parison Test		< 10	10	n/a		8.16%	
Point Estimat	te Summary										
Analysis ID	Endpoint	Point	t Estimate Metho	od		Level	μg/L	95% LCL	95% UCL	ΤU	<b>√</b>
10-0218-2093	Cell Density	Linea	ır Interpolation (IC	PIN)		IC5	3.223	1.965	6.094		
						IC10	6.446	3.93	12.18		
						IC15	9.669	5.896	44.85		
						IC20	24.73	0.7599	80.82		
						IC25	67.99	n/a	152.4		
						IC40	>140	n/a	n/a		
						IC50	>140	n/a	n/a		
Test Accepta	bility				TAC L	imits	· · · · · ·				
Analysis ID	Endpoint	Attril	bute	Test Stat	Lower	Upper	Overlap	Decision			
04-1574-4117	Cell Density	Cont	rol CV	0.06678	<<	0.2	Yes	Passes Cr	iteria		
10-0218-2093	Cell Density	Cont	rol CV	0.06678	<<	0.2	Yes	Passes Cr	riteria		
04-1574-4117	Cell Density	Cont	rol Resp	1.35E+6	1000000	>>	Yes	Passes Cr	riteria		
10-0218-2093	Cell Density	Cont	rol Resp	1.35E+6	1000000	>>	Yes	Passes Cr	riteria		

Cell Density Summary	
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Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect_
0	N	4	1.347E+6	1.204E+6	1.490E+6	1.286E+6	1.477E+6	4.499E+4	8.997E+4	6.68%	0.00%
10		4	1.138E+6	1.059E+6	1.218E+6	1.109E+6	1.213E+6	2.498E+4	4.997E+4	4.39%	15.51%
20		4	1.083E+6	9.123E+5	1.254E+6	1.004E+6	1.237E+6	5.363E+4	1.073E+5	9.90%	19.61%
40		4	1.061E+6	1.012E+6	1.110E+6	1.027E+6	1.102E+6	1.555E+4	3.110E+4	2.93%	21.25%
80		4	9.888E+5	9.420E+5	1.036E+6	9.510E+5	1.022E+6	1.469E+4	2.939E+4	2.97%	26.61%
140		4	9.428E+5	8.897E+5	9.958E+5	8.980E+5	9.770E+5	1.666E+4	3.331E+4	3.53%	30.02%

## **Cell Density Detail**

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5

21 Dec-18 10:17 (p 1 of 2)

	<b>y</b>	vai riopo							Test (	Code:	SEL1	20618   20	0-7096 <b>-</b> 1293
Selenastrum	Grow	th Test								Aquatic Bi	oassay & C	onsulting	Labs, Inc.
Analysis ID:	04-1	574-4117		dpoint:	Cell	Density			CETIS	S Version:	CETISv1.	9.2	
Analyzed:	21 [	Dec-18 10:1	5 <b>A</b> r	nalysis:	Para	ametric-Con	trol vs Treat	ments	Offici	al Results:	Yes		
Batch ID:	07-43	374-8636	Te	st Type:	Cell	Growth			Analy	st:			
Start Date:	06 D	ec-18 13:04	Pr	otocol:	EPA	/821/R-02-0	13 (2002)		Dilue	nt: Labo	ratory Wate	r	
<b>Ending Date:</b>	10 D	ec-18 12:30	Sp	ecies:	Sele	enastrum ca	pricornutum		Brine	: Not A	Applicable		
Duration:	95h		Sc	ource:	Aqu	atic Biosyste	ems, CO		Age:				
Sample ID:	00-93	351-0249	Co	ode:	SEL	.120618			Client	t: Interr	nal Lab		
Sample Date:	: 06 D	ec-18 13:04	Ma	aterial:	Cad	mium chlori	de		Proje	ct:			
Receipt Date:	:		Sc	ource:	Refe	erence Toxic	cant						
Sample Age:	n/a		St	ation:	REF	TOX							
Data Transfo	rm		Alt Hyp						NOEL	LOEL	TOEL	TU	PMSD
Untransforme	d		C > T					<	< 10	10	n/a		8.16%
Dunnett Mult	iple C	omparison	Test				9						
Control	vs	Control II		Test S	Stat	Critical	MSD DF	P-Type	P-Value	Decision(d	x:5%)		
Negative Conf	trol	10*		4.576		2.407	1E+05 6	CDF	5.5E-04	Significant	Effect		
		20*		5.785		2.407	1E+05 6	CDF	6.6E-05	Significant	Effect		
		40*		6.267		2.407	1E+05 6	CDF	4.1E-05	Significant	Effect		
		80*		7.849		2.407	1E+05 6	CDF	2.8E-05	Significant	Effect		
		140*		8.856		2.407	1E+05 6	CDF	2.7E-05	Significant	Effect		
Test Accepta	bility	Criteria	TAC	Limits									
Attribute		Test Stat	Lower	Uppe	г	Overlap	Decision						
Control CV		0.06678	<<	0.2		Yes	Passes Cr	iteria					
Control Resp		1.35E+6	1000000	) >>		Yes	Passes Cr	iteria					
ANOVA Table	e												
Source		Sum Squa	ares	Mean	Squ	are	DF	F Stat	P-Value	Decision(	a:5%)		
Between		4.050E+11		8.101	E+10	)	5	19.41	1.1E-06	Significant	Effect		
Error		7.511E+10	)	4.173	E+09	)	18						
Total		4.801E+11					23						
Distributiona	ıl Test	s											
Attribute		Test					Test Stat	Critical	P-Value	Decision(	a:1%)		
Variances		Bartlett Eq	uality of \	/ariance ⁻	Test		8.494	15.09	0.1310	Equal Vari	ances		
Variances		Levene Eq	uality of \	√ariance [·]	Test		1.861	4.248	0.1516	Equal Vari	ances		
Variances		Mod Lever	ne Equalit	ty of Varia	ince :	Test	0.8958	4.248	0.5047	Equal Vari	ances		
Distribution		Anderson-	Darling A	2 Normali	ity Te	est	0.8885	3.878	0.0231	Normal Dis	stribution		
Distribution		D'Agostino	Kurtosis	Test			1.662	2.576	0.0964	Normal Dis	stribution		
Distribution		D'Agostino					2.496	2.576	0.0126	Normal Dis	stribution		
Distribution		D'Agostino			ibus	Test	8.992	9.21	0.0112	Normal Dis	stribution		
Distribution		Kolmogoro					0.1651	0.2056	0.0895	Normal Dis			
Distribution		Shapiro-W	'ilk W Noi	rmality Te	st		0.8988	0.884	0.0203	Normal Dis	stribution		
Cell Density	Sumn	nary											
Conc-µg/L		Code	Count	Mear	1	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0		N	4	1.347	E+6	1.204E+6	1.490E+6	1.313E+6	1.286E+6	1.477E+6	4.499E+4	6.68%	0.00%
10			4	1.138	8E+6	1.059E+6	1.218E+6	1.116E+6	1.109E+6	1.213E+6			15.51%
20			4				1.254E+6			1.237E+6	5.363E+4		19.61%
40			1	1.061	ETE	4.040016	1 110046	1.0505+6	4.007546	1.100046	4 5555 4	2.020/	24 250/

1.061E+6 1.012E+6 1.110E+6 1.058E+6 1.027E+6 1.102E+6 1.555E+4 2.93%

9.888E+5 9.420E+5 1.036E+6 9.910E+5 9.510E+5 1.022E+6 1.469E+4 2.97%

9.428E+5 8.897E+5 9:958E+5 9.480E+5 8.980E+5 9.770E+5 1.666E+4 3.53%

4

40

80

140

21.25%

26.61%

30.02%

21 Dec-18 10:17 (p 2 of 2)

Test Code:

SEL120618 | 20-7096-1293

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-1574-4117 Analyzed:

Selenastrum Growth Test

21 Dec-18 10:15

Endpoint: Cell Density Analysis: Parametric-Control vs Treatments

**CETIS Version:** Official Results:

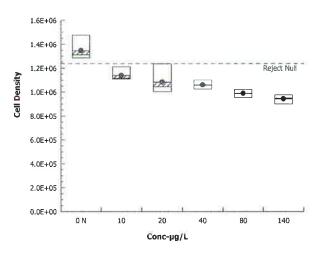
Yes

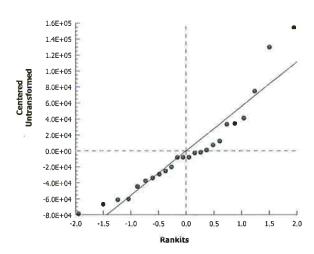
CETISv1.9.2

**Cell Density Detail** 

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9.550E+5

#### Graphics





21 Dec-18 10:17 (p 1 of 2)

Test Code:

SEL120618 | 20-7096-1293

								rest Code.		٥	EL 1200	10   20-7090-	1293
Selenas	strum	Growth Test						Aqua	atic Bi	oassay	& Cons	sulting Labs,	lnc.
Analysi Analyze		10-0218-2093 21 Dec-18 10:1	Endpo		Cell Density	tion (ICDINI)		CETIS Vers			Sv1.9.2		
Allalyze	au:	21 Dec-16 10.1	5 Analys	515;	Linear Interpola	ition (ICPIN)		Official Re	suits:	Yes			
Batch I	D:	07-4374-8636	Test T	ype:	Cell Growth			Analyst:					
Start Da	ate:	06 Dec-18 13:04	Protoc	ol:	EPA/821/R-02-	013 (2002)		Diluent:	Labo	ratory V	Vater		
Ending	Date:	10 Dec-18 12:30	Specie	es:	Selenastrum ca	pricornutum		Brine:	Not A	pplicab	le		
Duratio	n:	95h	Source	e:	Aquatic Biosyst	ems, CO		Age:					
Sample	D:	00-9351-0249	Code:		SEL120618			Client:	Interr	nal Lab			
Sample	Date:	06 Dec-18 13:04	Materi	al:	Cadmium chlor	ide		Project:					
Receipt	t Date:		Source	e:	Reference Toxi	cant							
Sample	Age:	n/a	Station	n:	REF TOX								
Linear	Interpo	olation Options											
X Trans	sform	Y Transform	Seed		Resamples	Exp 95% CL	Method						
Linear		Linear	0		280	Yes	Two-Point	Interpolation	1				
Test Ac	ceptal	oility Criteria	TAC Lim	its									
Attribut	te	Test Stat	Lower (	Jppe	r Overlap	Decision							
Control	CV	0.06678	<< (	).2	Yes	Passes Criteria							
Control	Resp	1.35E+6	1000000 >	>>	Yes	Passes Criteria							
Point E	stimat	es											
Level	μg/L	95% LCL	95% UCL										
IC5	3.223	1.965	6.094										
IC10	6.446	3.93	12.18										
IC15	9.669	5.896	44.85										
1C20	24.73	0.7599	80.82										

Cell Density Su	ummary				Cal	culated Var	riate		
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Ν	4	1.347E+6	1.286E+6	1.477E+6	4.499E+4	8.997E+4	6.68%	0.0%
10		4	1.138E+6	1.109E+6	1.213E+6	2.498E+4	4.997E+4	4.39%	15.51%
20		4	1.083E+6	1.004E+6	1.237E+6	5.363E+4	1.073E+5	9.90%	19.61%
40		4	1.061E+6	1.027E+6	1.102E+6	1.555E+4	3.110E+4	2.93%	21.25%
80		4	9.888E+5	9.510E+5	1.022E+6	1.469E+4	2.939E+4	2.97%	26.61%
140		4	9.428E+5	8.980E+5	9:770E+5	1.666E+4	3.331E+4	3.53%	30.02%

#### **Cell Density Detail**

IC25

IC40

IC50

67.99

>140

>140

n/a

n/a

n/a

152.4

n/a

n/a

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.287E+6	1.339E+6	1.477E+6	1.286E+6
10		1.213E+6	1.109E+6	1.113E+6	1.118E+6
20		1.004E+6	1.016E+6	1.075E+6	1.237E+6
40		1.102E+6	1.053E+6	1.062E+6	1.027E+6
80		1.022E+6	9.960E+5	9.510E+5	9.860E+5
140		9.770E+5	9.410E+5	8.980E+5	9,550E+5

Analyst:_____QA:____

21 Dec-18 10:17 (p 2 of 2)

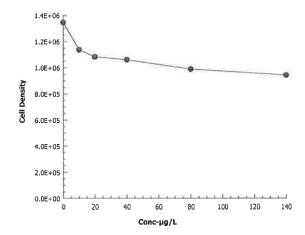
Test Code:

SEL120618 | 20-7096-1293

Aquatic Bioassay & Consulting Labs, Inc. Selenastrum Growth Test

Analysis ID: 10-0218-2093 Endpoint: Cell Density **CETIS Version:** CETISv1.9.2 Analysis: Linear Interpolation (ICPIN) Official Results: Analyzed: 21 Dec-18 10:15 Yes

#### Graphics



Report Date: Test Code:

21 Dec-18 10:17 (p 1 of 2) SEL120618 | 20-7096-1293

Selenastrum	Growth Test			Aqu	atic Bioassay & Consulting Labs, Inc.
Batch ID: Start Date: Ending Date; Duration:	07-4374-8636 06 Dec-18 13:04 10 Dec-18 12:30 95h		Cell Growth EPA/821/R-02-013 (2002) Selenastrum capricornutum Aquatic Biosystems, CO	Analyst: Diluent: Brine: Age:	Laboratory Water Not Applicable
Sample ID: Sample Date: Receipt Date: Sample Age:		Code: Material: Source: Station:	SEL120618 Cadmium chloride Reference Toxicant REF TOX	Client: Project:	Internal Lab

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Cour
0	N	1	68			68	68	0	0	0.0%	0
10		1	60			60	60	0	0	0.0%	0
20		1	61			61	61	0	0	0.0%	0
40		1	63			63	63	0	0	0.0%	0
80		1	56			56	56	0	0	0.0%	0
140		1	55			55	55	0	0	0.0%	0
Overall		6	60.5	55.5	65.5	55	68	1.945	4.764	7.88%	0 (0%)

Conductivity-µ	mnos										
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	432	399.2	464.8	417	479	11.8	26.39	6.11%	0
10		5	434.4	428.2	440.6	430	443	2.249	5.03	1.16%	0
20		5	424.6	420.2	429	420	428	1.6	3.578	0.84%	0
40		5	410.2	403.7	416.7	405	419	2.354	5.263	1.28%	0
80		5	397	395.5	398.5	395	398	0.5477	1.225	0.31%	0
140		5	378.2	371.2	385.2	373	387	2.518	5.63	1.49%	0
Overall		30	412.7	404.2	421.3	373	479	4.197	22.99	5.57%	0 (0%)

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Cou
0	N	1	110			110	110	0	0	0.0%	0
10		1	108			108	108	0	0	0.0%	0
20		1	112			112	112	0	0	0.0%	0
40		1	116			116	116	0	0	0.0%	0
80		1	99			99	99	0	0	0.0%	0
140		1	96			96	96	0	0	0.0%	0
Overall		6	106.8	98.69	115	96	116	3.167	7.757	7.26%	0 (0%)

pH-Units					()						
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.384	7.656	7.4	7.7	0.04899	0.1095	1.46%	0
10		5	7.6	7.448	7.752	7.5	7.8	0.05477	0.1225	1.61%	0
20		5	7.62	7.516	7.724	7.5	7.7	0.03742	0.08367	1.1%	0
40		5	7.62	7.516	7.724	7.5	7.7	0.03742	0.08367	1.1%	0
80		5	7.64	7.498	7.782	7.5	7.8	0.05099	0.114	1.49%	0
140		5	7.6	7.476	7.724	7.5	7.7	0.04472	0.1	1.32%	0
Overall		30	7.6	7.562	7.638	7.4	7.8	0.01857	0.1017	1.34%	0 (0%)
					8						

000-189-126-0

CETIS™ v1.9.2.6

QA: Analyst:_

Report Date: Test Code:

21 Dec-18 10:17 (p 2 of 2)

SEL120618 | 20-7096-1293

Selenastrum Gr	rowth Test							Aquatic	Bioassay &	Consultin	g Labs, Inc.
Temperature-°C	;										
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
10		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
20		5	24.52	23.87	25.17	24	25.2	0.2332	0.5215	2.13%	0
40		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
80		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
140		5	24.72	24.15	25.29	24	25.2	0.2059	0.4604	1.86%	0
Overall		30	24.69	24.52	24.85	24	25.2	0.07947	0.4353	1.76%	0 (0%)
Alkalinity (CaCo	03)-mg/L	_									
Conc-µg/L	Code	1									
0	N	68									
10		60									
20		61									
40		63				10					
80		56									
140		55									
Conductivity-µr	nhos				-						
Conc-µg/L	Code	1	2	3	4	5					
0	N	417	420	420	424	479					
10		430	434	432	433	443					
20		420	422	425	428	428					
40		408	409	405	410	419					
80		395	397	398	397	398					
140		373	374	377	380	387					
Hardness (CaC	O3)-ma/l	0,0									
Conc-µg/L	Code	1									
0	N	110				====					
10	14	108									
20		112									
40		116									
80		99				150					
140		96									
pH-Units											
Conc-µg/L	Code	1	2	3	4	5					
0	N	7.5	7.4	7.5	7.5	7.7					
10		7.6	7.6	7.5	7.5	7.8					
20		7.7	7.6	7.6	7.5	7.7					
40		7.7	7.6	7.5	7.6	7.7					
80		7.7	7.6	7.5	7.6	7.8					
140		7.7	7.6	7.5	7.5	7.7					
Temperature-°0											
Conc-µg/L	Code	1	2	3	4	5					
0	N	24.6	25.2	24	25	24.8					
10		24.6	25.2	24	25	24.8					
20		24.6	25.2	24	24	24.8					
40		24.6	25.2	24	25	24.8					
80		24.6	25.2	24	25	24.8					
140		24.6	25.2	24	25	24.8					

Analyst: QA:

## **CHAIN OF CUSTODY FORM**

Client Name	all datases			T		Project:			R	R	S/R	R	R	R	R	R	R	R			ANALYSIS REQUIRED
Haley & Al				E	oeing	-SSFL NPDE	s			T	T	Т	T	6	Γ	T	T	T			
	on Center Rd Suite 300			<b>i</b> .		rmit 2018				1	18			<u> ≅ ≈ ₹</u>			=				
1				Semiannu		fall [003-007	, 009, 0	10]			(E300)			, Gross Beta(E900 0), Sr-90 (E905 0), Total 26 (E903.0 or E903 1) & Uranium (E908.0), K-4 (901.1)		1	£	₽			
San Diego,	ca Contact: Urvashi Patel	TestAmerica's services		1	U	utfall 009 Comp			1 _	1_	1 9		1 _	8688	1		E E	(E245			
	an Ave Suite #100	CoC shall be performe accordance with the Ti				Comp			E	8	l ĕ	1	Se, T	# 55 P P P P P P P P P P P P P P P P P P	ล	1	3	<u>a</u>			
Irvine CA 9		Blanket Service Agrees	nent# 2015	.]					S,	161	₽			B € €	8	E	Mercury (E245	Mercury		I	
Tel 949-260		18-TestAmerica by and Haley & Aldrich, Inc., if	i between	Projec	t Mans	ager Kather	ine Mille	er	g.	世	1 2	1	S,	8 6 6 E	<b>E</b>	렱	≥ 2	19		1	
Cell 949-33	3-9055	subsidiaries and affilia	tes, and	1 7		6, 520.904.6			1 a G	ers.	1 4	=	₽ €	80,52	Ψ	i i	ig i	is is	ति		Comments
		YestAmenca Laborato	nes Inc	020.20		O, OE0.00+.0	J-7-7 (55.	"	Metals Cu, Pb,	95	Z	8	Metais:	9.0 × 5 m	8	88	≨	esta	ş		
<u> </u>				Field	Mana	ger: Mark D	ominick		를 드 팔	congeners) (E1613B)	2	Į į	Ž g g g g g	E900.0), Gross (E906.0), Sr-90 adium 226 (E90 (E904.0), Uran 1.0 or E901.1)	8	25	율	ž	ğ	l	
Sampler: D	an Smith			1		_			8 7 C		1 7	1 Å	Pa Z S	pha(E900. H-3) (E906 ed Radium 228 (E904 (E901.0 or	1 1	28	1 8	NO.	0	1	
N	P41			9/8 23	4 503	3, 818 599.0	702 (CE)	1	A Z S	2	Įž	18	2 X	22.8 (E90 R)	0	5 ±	ğ	Dissolved Metals	g		
				1					Total Recoverable Metals (E200.7): Nr, Zn (E200.8): Ag, Cd, Cu, Pb, S	TCDD (and all	SO4, NO3+NO2-N, Perchlorate	TDS (SM2540C/E160	Total Dissolved (E200.7): Ni, Zn (E200.8). Ag, C	Gross Alpha(E900.0), Tritum (H-3) (E908.0), Combined Radium 228 Radium 228 (E904.0) CS-137 (E901.0 or E9	Cyenide (SM4500-CN-E / E335 2)	Chronic Toxicity - Selenastrum EPA-821-R-02-013)	Total Recoverable Metals	Ö	TSS (160.2 (SM25400))		
Sample			Sample		# of	Preservative	Some #	MISHMSD	822	8	[ S	S	8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	SE PERSON	Š	FE	1 8	Total	SS	İ	
Description	Sample I D.	Sampling Date/Time	<del> </del>	Container Type	Cont	1	<del> </del>	<del></del>		+-	10	+ +-	1 - 5 - 5	10FOEO	15	100	1-	+-	<del></del>	<del> </del>	
			WM	500 mL Poty	3	HNO ₃	95	Yes	×	1	-	+	<b>_</b>	<del> </del>	├	<del> </del>	<del> </del>	-		-	
			WM	1 L Glass Amber	2	None	110	No		×	1	-			<del> </del> -	-					48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	6	None	140	Yes	<u> </u>	↓	<u>x</u>	<del></del>	<b>↓</b>		ļ	<del> </del>	<del>  -</del> -	₩	<u> </u>		46 hours Holding Time NOS & NOZ
1		1	WM	500 mL Poly	1	None	155	No	<b></b>		ــــــ	X	<u> </u>	ļ	<u> </u>	-	<del>  </del>			ļ	
וו			WM	500 mL Poly	3	NaOH	220	Yes	<u> </u>		<u> </u>	<u> </u>	<u> </u>		×	-		ļ			
i i	Outfall009_20181207_Comp	12/7/2018	WM	2 5 Gal Cube	3	None	225	Yes	<u> </u>		┸_	<u> </u>	<u> </u>	- x						<u> </u>	Unfiltered and unpreserved analysis, Separate RAD onto
		60	ww	1 L Glass Amber	3	None	230	Yes				1	}			1	1	1		<u> </u>	another workorder. Analyze duplicate, not MS/MSD
Outfall 009		6900	WM	1 Gal Cube	6	None	235	No	1		T					Х					Only test if first or second rain events of the year
				homsilicate anale		<del> </del>	315	Y85	Se fi	w	†	1					×				Sample receiving DO NOT OPEN BAG. Bag to be opened
-			WM			HNO ₃	<b></b>	<del></del>	13.04	160	—	ļ	ļ	<u> </u>	<u> </u>		<u> </u>	-	<del></del>		in Mercury Prep using clean procedures
:			WW	1 L Poly	1	None	185	- No	<u> </u>		1_	—		<u> </u>		<del> </del>	<b>}</b>		×	<del>}</del>	Filter and preserve w/in 24hrs of receipt at lab
'	_		WM	1 L Poly	3	None	205	Yes	<u> </u>	1-		ـــــ	×	ļ		<b>↓</b>	ļ	<del> </del>	<u> </u>	ļ	Sample receiving DO NOT OPEN BAG, Bag to be opened
1	Outfall009_20181207_Comp_F	12/7/2018/	, ww	borosilicate vials	3	None	320	Yes	1		1	1	]					X			in Mercury Prep using clean procedures
ļ ļ			WM	1 L Glass Amber	2	None	110	No		Н	†	1		<b>T</b>		T	1				Haid
1 1	Outfall009_20181207_Comp_Extra	12/7/2018	<u> </u>	500 mL Poly	2	None	145	No	<del> </del>	<del>                                     </del>	H	<del>                                     </del>	1			1	<u> </u>	1			Hold
<u> </u>		194	90701	300 list Foly	+	110110	+	<del>                                     </del>	<b></b>	+	+	+	$\vdash$		<del> </del>	1	_	İ		1	
					ļ	<del> </del>	<del> </del>	-	<del> </del>		┼	╂	<del> </del>	<del> </del>	┝┈	+	┼──				
				<u> </u>	<u> </u>		<u> </u>	ļ	ļ	+	↓	1		<b>i</b>	<u> </u>		├	<del> </del>			
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Relinquished	By Date/Time		Comp	any			Receive	d By	_		Date/Ti	me							Tum-a	round	time: (Check)
Reiniquisirea	54						1.1.	•	1/2.			,-g .	7 /12	142	20				24 Hot	ur	72 Hour 10 DayX
10.1	1 1/10/2	18/143	t /	by by A	1//	3/	(IAA	VC01	Vef	A	_ /	l.	7-18	175	<b>フ</b> コ	>			48 Hoi	ur	5 Day Normal
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13

12/20/2010

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17461 Derian Ave Suite 100

Irvine, CA 92614-5817













**Chain of Custody Record** 

# <u>TestAmerica</u>

Phone (949) 261-1022 Fax (949) 260-3297				-						100000000				THE PARTY CON		THE LEADER IN	N ENVIRONMENTAL TESTIN	NG
Client Information (Sub Contract Lab)	Sampler:			Lab Pat	PM: el, Ur	rvash	ni				Ca	rrier Trac	king No(:	s):		COC No: 440-130568.1		45.5
Client Contact: Shipping/Receiving	Phone:			E-M		natal	@tosts			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		ate of Orig				Page:	DI .	_
Company: TestAmerica Laboratories, Inc.				Juiv			@testa				C	alifornia			_	Page 1 of 1 Job #:		_
Address:	Due Date Request	had:					ogram			A.C. 41						440-226822-1	1	
13715 Rider Trail North, . City:	12/19/2018	ieu.							Ana	lysis	Reau	ested				Preservation (	odes:	
Earth City	TAT Requested (d	lays):				100		П		Ť		T	$\top$	ТТ	QI.	A - HCL B - NaOH	M - Hexane N - None	
State, Zip: MO, 63045																C - Zn Acetate D - Nitric Acid E - NaHSO4	O - AsNaO2 P - Na2O4S	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:															F - MeOH G - Amchlor	Q - Na2SO3 R - Na2S2O3 S - H2SO4	
Email:	WO #:				ž	0	9									H - Ascorbic Acid	<ul> <li>T - TSP Dodecahydrate</li> <li>U - Acetone</li> </ul>	e
Project Name: Semiannual Outfall 009 Comp	Project #: 44009879				(Yes	s or No)	rontiun								containers	J - DI Water K - EDTA L - EDA	V - MCAA W - pH 4-5 Z - other (specify)	
Site:	SSOW#:				- Jan	D (Ye	7 Str								conta	Other:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid O=waste/oil, BT=Tissue, A=Air	eld Filtered Sa	Perform MS/MSI	905_Sr90/PrecSep_7				3				Total Number of		Instructions/Note:	
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Outfall009_20181207_Comp (440-226822-1MS)	12/7/18	09:00 Pacific	MS	Water	П		x		T			T		+	2	date from prese Boeing SSFL; D	OO NOT FILTER; use pre	p
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					$\prod$													
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TestAmerica Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817



# **Chain of Custody Record**

# <u>TestAmerica</u>

Client Information (Sub Contract Lab)	Sampler:				PM:	lava	ala:						Carrie	er Track	ing No(s):			COC No:	NVIRONMENTAL TEST	ING
Client Contact:	Phone:				Mail:	Jrva	SNI		_				State	of Original				440-130568.1		
Shipping/Receiving Company:				1000	vashi									of Origi ornia	n:			Page: Page 1 of 1		
TestAmerica Laboratories, Inc.					Ac.	credit	tations	s Req	uired	(See liforn	note);							Job #:		_
Address: 13715 Rider Trail North,	Due Date Request	ed:			1	0.0	iogi	din	Oai	MOITI	ia						-	440-226822-3 Preservation Cod	dan	
City:	1/8/2019 TAT Requested (d.	lave).			+	_	_		_	A	naly	sis R	eques	ted				A - HCL	M - Hexane	
Earth City State, Zip:		ayoj.																B - NaOH	N - None	
MO, 63045						100												C - Zn Acetate D - Nitric Acid E - NaHSO4	O - AsNaO2 P - Na2O4S Q - Na2SO3	
Phone: 314-298-8566(TeI) 314-298-8757(Fax)	PO #:						m-137	mn.										F - MeOH G - Amchlor	R - Na2S2O3 S - H2SO4	
Email:	WO #:				or No	(0)	and Cesium-137	al Uranium	Alpha/Beta	,,								H - Ascorbic Acid I - Ice	T - TSP Dodecahydra U - Acetone	ate
Project Name: Semiannual Outfall 009 Comp	Project #: 44009879				(Yes	or N	0 and	n Total	Alph	m-226	1-228	Tritium					iners	J - DI Water K - EDTA	V - MCAA W - pH 4-5	
Site:	SSOW#:				mple	(Yes	0 K-40	Acti	Gross	Radium-226	adiun	Susp Tri					ontai	L - EDA Other:	Z - other (specify)	
				r -	ed Sa	S/MSD	Geo	Chrom	ration		10 G	Dist_Su			ļ.		ar of c			
Sample Identification Climate Published		Sample	Sample Type (C=comp,	Matrix (W=water, S=soli	Id Filter	rform MS	.1_Cs/Fill	A01R_U/ExtCh	900.0/Evaporation	903.0/PrecSep_21	904.0/PrecSep_0 Radium-228	906.0/LSC_D					I Numbe			
Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab)		·) 🖺	Per	901.1	A01	900	903	904	906	4				Total	Special In	structions/Note:	
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Outfall009_20181207_Comp (440-226822-1MSD)	12/7/18	09:00 Pacific	MSD	Water	П			X	Х	х	х	x					2	date from preserva Boeing SSFL; DO date from preserva	NOT FILTER; use pr	ер
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telinquished by:	Date/Tilpe:	Phi		Company	V	-	Recei	ved b	/		_		-		Date/Tin	1111	Ö	11:00	Company	_
telinquished by:	Date/Time:		-	Company	-	-	Receiv	ved b	y:						Date/Tim	ne:			Company	
Custody Seals Intact: Custody Seal No.:						4					0 -	10120				Mary I			Company	
Δ Yes Δ No						-	Cooler	r Tem	perat	ure(s)	"C ar	nd Other	Remarks							

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-226822-1

Login Number: 226822 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, 11m		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**TestAmerica Irvine**Page 44 of 45

12/28/2018



## Sacramento

Sample Receiving Notes



Job:__

b: 440-226822 Field S

Notes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / H	ACC	o / Ot	ner
	Ice Wet Gel	Othe	r	
	Cooler Custody Seal:Sea			
	Cooler Custody Seal.		_	
	Sample Custody Seal:			
	Cooler ID:			
	10	1	1	
	Temp: Observed Corrected	1	U	
	From: Temp Blank   Sample			
	NCM Filed: Yes □ No			
		Yes	No	NA
	Perchlorate has headspace?			Ø
	Alkalinity has no headspace?			Ø
	CoC is complete w/o discrepancies?	Ø		
	Samples received within holding time?	P		
	Sample preservatives verified?			D
	Cooler compromised/tampered with?		d	
	Samples compromised/tampered with?		p'	
	Samples w/o discrepancies?	pr		
	Sample containers have legible labels?	Ď		
	Containers are not broken or leaking?	Þ		
	Sample date/times are provided.	Ø		
	Appropriate containers are used?	P		
	Sample bottles are completely filled?	Ø		
<u> </u>	Zero headspace?*			Ø
	Multiphasic samples are not present?	区		
	Sample temp OK?	囡		
	Sample out of temp?		Ø	

WVVB

#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-226822-2

### **Prepared for**

Haley & Aldrich, Inc. 600 South Meyer Avenue, Suite 100 Tucson, Arizona 85701

11 January 2019





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#### **TABLES**

- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



#### INTRODUCTION

Task Order Title: Boeing SSFL NPDES
Contract: 40458-078 and 40458-083
MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226822-2

**Project Manager:** Katherine Miller

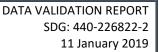
Matrix: Water QC Level: IV

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009 20181207	7	N/A	\A/a+a#	12/07/2018	F1C12D
Comp	440-226822-1		Water	09:00 AM	E1613B





#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226822-2:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the original and transfer COCs.
- The transfer COC to TA-West Sacramento noted custody seals were present and intact on the cooler.



#### **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



### **TABLE 3 - REASON CODE REFERENCE**

Reason	Passon							
Code	Organic	Inorganic						
Н	Holding time was exceeded.	Holding time was exceeded.						
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.						
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.						
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.						
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.						
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.						
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.						
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.						
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.						
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.						
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.						
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.						
А	Not applicable.	Serial dilution %D was outside control limits.						
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.						
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.						



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. EPA METHOD 1613B — DIOXIN/FURANS

#### L. Calvin of MEC^x reviewed the SDG on January 11, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

#### **III.1. HOLDING TIMES**

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

#### **III.2. INSTRUMENT PERFORMANCE**

Instrument performance criteria were met. Following are findings associated with instrument performance:

#### III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as <25%.

#### III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power >10,000.

#### III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs  $\leq$ 20% for the 15 native compounds (calibration by isotope dilution) and  $\leq$ 35% for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

#### **III.4. QUALITY CONTROL SAMPLES**

#### |||.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit (RL) for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, OCDD, and OCDF, and for totals TCDF, HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the RL were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of 1,2,3,4,6,7,8-HpCDD was not sufficient to qualify the sample result above the RL. As total



HpCDD in the sample consisted only of the unqualified isomer, total HpCDD was not qualified. The result above the RL for OCDD was <10× the method blank concentration, and was therefore qualified as a nondetect (U) at the level of contamination. As total TCDF in the sample consisted only of the rejected isomer result (which would have been qualified for method blank contamination if retained), total TCDF was qualified as a nondetect (U) at the level of contamination. The reviewer verified that peaks comprising total HpCDF in the method blank were the same peaks comprising total HpCDF in sample Outfall009_20181207_Comp at similar concentrations. The result for total HpCDF was qualified as a nondetect (U) at the level of contamination. Results for totals HxCDD and HxCDF were qualified as estimated (J) as they contained one or more peaks not present in the method blank.

#### III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of ≤50%.

#### III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### 11.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

#### III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

#### III.6. INTERNAL STANDARDS PERFORMANCE

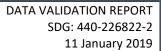
The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

#### III.7. COMPOUND IDENTIFICATION

Compound identification was verified. With the exception of estimated maximum possible concentrations (EMPCs), detected compounds met the ion abundance ratio, retention time window and signal-to-noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was detected in the initial analysis of the sample; however, the detect was not confirmed by second-column analysis. Both initial and confirmation analyses were reported. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the initial result was rejected (R) in favor of the nondetect confirmation result.

#### **III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.





Isomers reported as EMPCs not previously qualified as nondetects for method blank contamination were qualified as estimated nondetects (UJ) at the level of contamination. The result for total TCDD matched the isomer concentration qualified as an EMPC; therefore, total TCDD was also qualified as an estimated nondetect (UJ). Totals HxCDD and PeCDF contained both EMPC peaks and non-EMPC peaks, and were qualified as estimated (J). The total result for TCDF was not further qualified as an EMPC, as it was would have been qualified as a nondetect for method blank contamination had the result been retained over the confirmation column.

# Validated Sample Result Forms: 4402268222

Analysis Method: E1613B

Sample Name Ou	utfall009_20181207_Comp	p	Matrix Ty	pe: W F	Result Typ	e: TRG		
Lab Sample Name:	440-226822-1 <b>Sam</b>	ple Date/Time:	12/07/2018	09:00		Validatio	on Level: 8	
Analyte	CAS No	Result Value	DL	LOQ	Result Units	Lab Qualifier	Validation Qualifier	Validation Reason Code
,2,3,4,6,7,8-HpCDD	35822-46-9	0.000074	0.00000074	0.000048	ug/L	MB		
,2,3,4,6,7,8-HpCDF	67562-39-4	0.000012	0.00000036	0.000048	ug/L	J,DXMB	U	В
,2,3,4,7,8,9-HpCDF	55673-89-7	0.0000021	0.00000043	0.000048	ug/L	J,DXMB	U	В
,2,3,4,7,8-HxCDD	39227-28-6	0.0000028	0.00000026	0.000048	ug/L	J,DXMB	U	В
,2,3,4,7,8-HxCDF	70648-26-9	0.0000016	0.00000024	0.000048	ug/L	J,DX	J	DNQ
,2,3,6,7,8-HxCDD	57653-85-7	0.0000031	0.00000025	0.000048	ug/L	J,DXMB	U	В
,2,3,6,7,8-HxCDF	57117-44-9	0.0000014	0.00000021	0.000048	ug/L	J,DXMB	U	В
,2,3,7,8,9-HxCDD	19408-74-3	0.0000031	0.00000024	0.000048	ug/L	J,DXqMB	U	В
,2,3,7,8,9-HxCDF	72918-21-9	0.0000019	0.00000014	0.000048	ug/L	J,DXMB	U	В
,2,3,7,8-PeCDD	40321-76-4	0.0000017	0.00000025	0.000048	ug/L	J,DX	J	DNQ
,2,3,7,8-PeCDF	57117-41-6	0.0000011	0.00000021	0.000048	ug/L	J,DXq	UJ	*Ш
2,3,4,6,7,8-HxCDF	60851-34-5	0.0000013	0.00000015	0.000048	ug/L	J,DX	J	DNQ
2,3,4,7,8-PeCDF	57117-31-4	0.0000011	0.00000027	0.000048	ug/L	J,DX	J	DNQ
2,3,7,8-TCDD	1746-01-6	0.00000081	0.00000022	0.0000097	ug/L	J,DXq	UJ	*III
2,3,7,8-TCDF	51207-31-9		0.00000057	0.0000097	ug/L	U	U	
2,3,7,8-TCDF	51207-31-9	0.00000045	0.00000010	0.0000097	ug/L	J,DXqMB	R	D
OCDD	3268-87-9	0.00090	0.0000010	0.000097	ug/L	MB	U	В
OCDF	39001-02-0	0.000046	0.00000051	0.000097	ug/L	J,DXMB	U	В
Гotal HpCDD	37871-00-4	0.00015	0.00000074	0.000048	ug/L	MB		
Гotal HpCDF	38998-75-3	0.000033	0.00000036	0.000048	ug/L	J,DXMB	U	В
Total HxCDD	34465-46-8	0.000017	0.00000024	0.000048	ug/L	J,DXqMB	J	В, *Ш
Total HxCDF	55684-94-1	0.0000094	0.00000014	0.000048	ug/L	J,DXMB	J	В
Total PeCDD	36088-22-9	0.0000017	0.00000025	0.000048	ug/L	J,DX	J	DNQ
Total PeCDF	30402-15-4	0.0000022	0.00000021	0.000048	ug/L	J,DXq	J	DNQ, *III
Total TCDD	41903-57-5	0.00000081	0.00000022	0.0000097	ug/L	J,DXq	UJ	*Ш
Total TCDF	55722-27-5	0.00000045	0.00000010	0.0000097	ug/L	J,DXqMB	U	В

Thursday, January 17, 2019 Page 1 of 1



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226822-2

Client Project/Site: Semiannual Outfall 009 Comp

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Usli Patel

Authorized for release by: 12/28/2018 11:34:07 AM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

·····LINKS ·······

Review your project results through

Total Access

**Have a Question?** 



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Project/Site: Semiannual Outfall 009 Comp

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Usli fatel

Urvashi Patel Manager of Project Management 12/28/2018 11:34:07 AM

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226822-1	Outfall009_20181207_Comp	Water	12/07/18 09:00	12/07/18 21:05

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

Job ID: 440-226822-2

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226822-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.1° C, 2.6° C and 4.1° C.

#### Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: (CCV 320-266136/54), (LCS 320-264993/2-A), (LCSD 320-264993/3-A) and (MB 320-264993/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: Outfall009_20181207_Comp (440-226822-1), (CCV 320-266136/54), (LCS 320-264993/2-A), (LCSD 320-264993/3-A) and (MB 320-264993/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument 11D2 exceeded this criteria: Outfall009_20181207_Comp (440-226822-1) and (CCV 320-267413/2). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Dioxin Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

Client Sample ID: Outfall009_20181207_Comp Lab Sample ID: 440-226822-1

Date Collected: 12/07/18 09:00 Matrix: Water

Date Received: 12/07/18 21:05

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
2,3,7,8-TCDD	0.0000081	J,DX q	0.0000097	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,7,8-PeCDD	0.0000017	J,DX	0.000048	0.0000002 5	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,7,8-PeCDF	0.0000011	J,DX q	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
2,3,4,7,8-PeCDF	0.0000011	J,DX	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,4,7,8-HxCDD	0.0000028	J,DX MB	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,6,7,8-HxCDD	0.0000031	J,DX MB	0.000048	6 0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,7,8,9-HxCDD	0.0000031	J,DX q MB	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,4,7,8-HxCDF	0.0000016	J,DX	0.000048	4 0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,6,7,8-HxCDF	0.0000014	J,DX MB	0.000048	4 0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,7,8,9-HxCDF	0.0000019	J,DX MB	0.000048	0.0000001	ug/L		12/13/18 08:34	12/19/18 12:44	
2,3,4,6,7,8-HxCDF	0.0000013	J,DX	0.000048	4 0.0000001	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,4,6,7,8-HpCDD	0.000074	МВ	0.000048	5 0.0000007	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,4,6,7,8-HpCDF	0.000012	J,DX MB	0.000048	0.0000003	ug/L		12/13/18 08:34	12/19/18 12:44	
1,2,3,4,7,8,9-HpCDF	0.0000021	J,DX MB	0.000048	6 0.0000004	ug/L		12/13/18 08:34	12/19/18 12:44	
OCDD	0.00090	MR	0.000097	3 0.0000010	ua/l		12/13/18 08:34	12/19/18 12:44	
OCDF	0.000046		0.000097	0.00000010				12/19/18 12:44	
		•		1					
Total TCDD	0.0000081	J,DX q	0.0000097	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
Total TCDF	0.00000045	J,DX q MB	0.0000097	0.0000001	ug/L		12/13/18 08:34	12/19/18 12:44	
Total PeCDD	0.0000017	J,DX	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
Total PeCDF	0.0000022	J,DX q	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
Total HxCDD	0.000017	J,DX q MB	0.000048	0.0000002	ug/L		12/13/18 08:34	12/19/18 12:44	
Total HxCDF	0.0000094	J,DX MB	0.000048	0.0000001	ug/L		12/13/18 08:34	12/19/18 12:44	
Total HpCDD	0.00015	MB	0.000048	0.0000007	ug/L		12/13/18 08:34	12/19/18 12:44	
Total HpCDF	0.000033	J,DX MB	0.000048	0.0000003	ug/L		12/13/18 08:34	12/19/18 12:44	
sotope Dilution	%Recovery	Qualifier	Limits	6			Prepared	Analyzed	Dil F
13C-2,3,7,8-TCDD	77		25 - 164				12/13/18 08:34	12/19/18 12:44	
13C-2,3,7,8-TCDF	75		24 - 169				12/13/18 08:34	12/19/18 12:44	
13C-1,2,3,7,8-PeCDD	65		25 - 181				12/13/18 08:34	12/19/18 12:44	
13C-1,2,3,7,8-PeCDF	68		24 - 185				12/13/18 08:34	12/19/18 12:44	
13C-2,3,4,7,8-PeCDF	61		21 - 178				12/13/18 08:34	12/19/18 12:44	
13C-1,2,3,4,7,8-HxCDD	71		32 - 141				12/13/18 08:34	12/19/18 12:44	

TestAmerica Irvine

12/28/2018

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

Lab Sample ID: 440-226822-1

Matrix: Water

Client	Sample	ID: Outfall009 _.	_20181207_	_Comp

Date Collected: 12/07/18 09:00 Date Received: 12/07/18 21:05

Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,7,8-HxCDF	69	26 - 152	12/13/18 08:34	12/19/18 12:44	1
13C-1,2,3,6,7,8-HxCDF	71	26 - 123	12/13/18 08:34	12/19/18 12:44	1
13C-1,2,3,7,8,9-HxCDF	84	29 - 147	12/13/18 08:34	12/19/18 12:44	1
13C-2,3,4,6,7,8-HxCDF	77	28 - 136	12/13/18 08:34	12/19/18 12:44	1
13C-1,2,3,4,6,7,8-HpCDD	86	23 - 140	12/13/18 08:34	12/19/18 12:44	1
13C-1,2,3,4,6,7,8-HpCDF	79	28 - 143	12/13/18 08:34	12/19/18 12:44	1
13C-1,2,3,4,7,8,9-HpCDF	88	26 - 138	12/13/18 08:34	12/19/18 12:44	1
13C-OCDD	59	17 - 157	12/13/18 08:34	12/19/18 12:44	1
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD		35 - 197	12/13/18 08:34	12/19/18 12:44	1

Method: 1613B - Dioxin	s and Furans (HR	GC/HRMS	6) - RA						
Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND	-	0.0000097	0.000005	ug/L		12/13/18 08:34	12/24/18 15:08	1
				7					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	78		24 - 169				12/13/18 08:34	12/24/18 15:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD	82		35 - 197				12/13/18 08:34	12/24/18 15:08	1

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC

#### **Protocol References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

#### **Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009 20181207 Comp

TestAmerica Job ID: 440-226822-2

Lab Sample ID: 440-226822-1

**Matrix: Water** 

Date Collected: 12/07/18 09:00 Date Received: 12/07/18 21:05

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			1033.8 mL	20 uL	264993	12/13/18 08:34	ITH	TAL SAC
Total/NA	Analysis	1613B		1			266136	12/19/18 12:44	AS	TAL SAC
Total/NA	Prep	1613B	RA		1033.8 mL	20 uL	264993	12/13/18 08:34	ITH	TAL SAC
Total/NA	Analysis	1613B	RA	1			267413	12/24/18 15:08	KSS	TAL SAC

## **Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

# Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-264 Matrix: Water Analysis Batch: 266136						•	le ID: Method Prep Type: To Prep Batch:	otal/NA	
•		МВ					_	•	
Analyte 2,3,7,8-TCDD	Result ND	Qualifier	0.000010	0.0000002	Unit	_ <b>D</b>	Prepared 12/13/18 08:34	Analyzed 12/19/18 05:04	Dil Fac
کربر, ب _ر ن- ا صص	ND		0.000010	0.0000002 4	ug/L		12/13/10 00:34	12/13/10 00:04	1
2,3,7,8-TCDF	0.000000723	J,DX	0.000010	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,7,8-HxCDD	0.00000169	J,DX q	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,6,7,8-HxCDD	0.000000854	J,DX	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8,9-HxCDD	0.00000226	J,DX	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,6,7,8-HxCDF	0.000000364	J,DX q	0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,7,8,9-HxCDF	0.000000663	J,DX q	0.000050	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,6,7,8-HpCDD	0.00000555	J,DX	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,6,7,8-HpCDF	0.00000357	J,DX q	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
1,2,3,4,7,8,9-HpCDF	0.00000186	J,DX q	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
OCDD	0.0000975	•	0.00010	0.0000010	ug/L		12/13/18 08:34	12/19/18 05:04	1
OCDF	0.0000138	J,DX	0.00010	0.0000005	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total TCDD	ND		0.000010	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total TCDF	0.000000723	J,DX	0.000010	0.0000001	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total PeCDD	ND		0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total PeCDF	ND		0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HxCDD	0.00000481	J,DX q	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HxCDF	0.00000103	J,DX q	0.000050	0.0000002	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HpCDD	0.0000116	J,DX	0.000050	0.0000004	ug/L		12/13/18 08:34	12/19/18 05:04	1
Total HpCDF	0.00000658	J,DX q	0.000050	0.0000003	ug/L		12/13/18 08:34	12/19/18 05:04	1
	MB	MB		,					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	77		25 - 164				12/13/18 08:34	12/19/18 05:04	1
13C-2,3,7,8-TCDF	76		24 - 169				12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,7,8-PeCDD	65		25 - 181				12/13/18 08:34	12/19/18 05:04	1

TestAmerica Irvine

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TestAmerica Job ID: 440-226822-2

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

MB MB

105

Qualifier

%Recovery

Lab Sample ID: MB 320-264993/1-A

Matrix: Water

**Analysis Batch: 266136** 

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 264993

/ maryoro Datom 200100	MB M	/B			. Top Datom.	
Isotope Dilution	%Recovery Q		Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDF	67		24 - 185	12/13/18 08:34	12/19/18 05:04	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,6,7,8-HxCDD	74		28 - 130	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,6,7,8-HxCDF	70		26 - 123	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147	12/13/18 08:34	12/19/18 05:04	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,6,7,8-HpCDD	84		23 - 140	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,6,7,8-HpCDF	83		28 - 143	12/13/18 08:34	12/19/18 05:04	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138	12/13/18 08:34	12/19/18 05:04	1
13C-OCDD	53		17 - 157	12/13/18 08:34	12/19/18 05:04	1

Limits

35 - 197

Lab Sample ID: LCS 320-264993/2-A

**Matrix: Water** 

37CI4-2,3,7,8-TCDD

Surrogate

**Analysis Batch: 266136** 

Client Sample ID: Lab Control Sample Prep Type: Total/NA Prep Batch: 264993

12/13/18 08:34 12/19/18 05:04

Analyzed

Prepared

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits 2,3,7,8-TCDD 0.000200 0.000210 ug/L 105 67 - 158 2,3,7,8-TCDF 0.000200 0.000215 MB ug/L 108 75 - 158 0.00106 70 - 142 1,2,3,7,8-PeCDD 0.00100 ug/L 106 1,2,3,7,8-PeCDF 0.00100 0.00107 ug/L 107 80 - 134 ug/L 2,3,4,7,8-PeCDF 0.00100 0.00106 106 68 - 1601,2,3,4,7,8-HxCDD 0.00100 0.000974 MB ug/L 97 70 - 164 1,2,3,6,7,8-HxCDD 0.00100 0.00102 MB ug/L 102 76 - 134 124 64 - 162 1,2,3,7,8,9-HxCDD 0.00100 0.00124 MB ug/L 0.00101 101 1,2,3,4,7,8-HxCDF 0.00100 ug/L 72 - 134 ug/L 0.00100 0.000995 MB 100 84 - 130 1,2,3,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 0.00100 0.00104 MB ug/L 104 78 - 130 2,3,4,6,7,8-HxCDF 0.00100 0.00101 ug/L 101 70 - 156 1,2,3,4,6,7,8-HpCDD 0.00100 0.000963 MB ug/L 96 70 - 140 1,2,3,4,6,7,8-HpCDF 0.00100 0.000963 MB ug/L 96 82 - 122 1,2,3,4,7,8,9-HpCDF 0.00100 0.000965 MB ug/L 97 78 - 138 OCDD 0.00200 0.00191 MB 95 78 - 144 ug/L **OCDF** 0.00200 0.00217 MB ug/L 108 63 - 170

Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	79		20 - 175
13C-2,3,7,8-TCDF	81		22 - 152
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202

TestAmerica Irvine

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TestAmerica Job ID: 440-226822-2

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

%Recovery Qualifier

109

Lab Sample ID: LCS 320-264993/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** Analysis Batch: 266136 **Prep Batch: 264993** 

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	90		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	94		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	85		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	98		20 - 186
13C-OCDD	72		13 - 199
	LCS	LCS	

Lab Sample ID: LCSD 320-264993/3-A **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA

Limits

31 - 191

Surrogate

37CI4-2,3,7,8-TCDD

Analysis Batch: 266136							Prep Ba	atch: 26	34993
	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000206		ug/L		103	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000211	MB	ug/L		106	75 - 158	2	50
1,2,3,7,8-PeCDD	0.00100	0.00104		ug/L		104	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00103		ug/L		103	80 - 134	4	50
2,3,4,7,8-PeCDF	0.00100	0.00102		ug/L		102	68 - 160	4	50
1,2,3,4,7,8-HxCDD	0.00100	0.000968	MB	ug/L		97	70 - 164	1	50
1,2,3,6,7,8-HxCDD	0.00100	0.00100	MB	ug/L		100	76 - 134	2	50
1,2,3,7,8,9-HxCDD	0.00100	0.00106	MB	ug/L		106	64 - 162	16	50
1,2,3,4,7,8-HxCDF	0.00100	0.000988		ug/L		99	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.000987	MB	ug/L		99	84 - 130	1	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102	MB	ug/L		102	78 - 130	2	50
2,3,4,6,7,8-HxCDF	0.00100	0.000995		ug/L		99	70 - 156	1	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000950	MB	ug/L		95	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000973	MB	ug/L		97	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000940	MB	ug/L		94	78 - 138	3	50
OCDD	0.00200	0.00193	MB	ug/L		97	78 - 144	1	50
OCDF	0.00200	0.00217	MB	ug/L		108	63 - 170	0	50

OCDF			0.00200	0.00217	INIR	ug/L	108	63 - 170	U	50
	LCSD	LCSD								
Isotope Dilution	%Recovery	Qualifier	Limits							
13C-2,3,7,8-TCDD	82		20 - 175							
13C-2,3,7,8-TCDF	82		22 - 152							
13C-1,2,3,7,8-PeCDD	71		21 - 227							
13C-1,2,3,7,8-PeCDF	74		21 - 192							
13C-2,3,4,7,8-PeCDF	68		13 - 328							
13C-1,2,3,4,7,8-HxCDD	77		21 - 193							
13C-1,2,3,6,7,8-HxCDD	76		25 - 163							
13C-1,2,3,4,7,8-HxCDF	73		19 - 202							
13C-1,2,3,6,7,8-HxCDF	73		21 - 159							
13C-1,2,3,7,8,9-HxCDF	88		17 - 205							
13C-2,3,4,6,7,8-HxCDF	79		22 - 176							
13C-1,2,3,4,6,7,8-HpCDD	91		26 - 166							
13C-1,2,3,4,6,7,8-HpCDF	87		21 - 158							

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# **QC Sample Results**

Limits

20 - 186

13 - 199

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-264993/3-A

**Matrix: Water** 

**Analysis Batch: 266136** 

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	
13C-1,2,3,4,7,8,9-HpCDF	94		_
13C-OCDD	63		

LCSD	LCSD

	LUSD	LUSD	
Surrogate	%Recovery	Qualifier	Limits
37CI4-2,3,7,8-TCDD	110		31 - 191

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 264993

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

## **Specialty Organics**

## **Prep Batch: 264993**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	1613B	
440-226822-1 - RA	Outfall009_20181207_Comp	Total/NA	Water	1613B	
MB 320-264993/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-264993/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-264993/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

## **Analysis Batch: 266136**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	1613B	264993
MB 320-264993/1-A	Method Blank	Total/NA	Water	1613B	264993
LCS 320-264993/2-A	Lab Control Sample	Total/NA	Water	1613B	264993
LCSD 320-264993/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	264993

## **Analysis Batch: 267413**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1 - RA	Outfall009 20181207 Comp	Total/NA	Water	1613B	264993

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

**Qualifier Description** 

Reporting Limit or Requested Limit (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

Relative Percent Difference, a measure of the relative difference between two points

TestAmerica Job ID: 440-226822-2

## **Qualifiers**

# **Dioxin**Qualifier

MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The
	measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

# Glossary

RL

RPD

TEF

TEQ

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)

TestAmerica Irvine

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

## **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

## **Laboratory: TestAmerica Sacramento**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

TestAmerica Irvine

## **CHAIN OF CUSTODY FORM**

17	Client Nam	a/Addrace			i		Project:			R	R	S/R	l R	R	ĸ	ĸ	ĸ	ĸ	ĸ			ANALTOIS REQUIRED
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1			, , , , , , , , , , , , , , , , , , , ,							₹ 3	congeners) (E1613B)	1 6	) Š	Cu,	9 E 2 2 9 E E E E E E E E E E E E E E E	ğ	S €	25	Aeta	32		
ŀ	Sampler: D	afi Smith	<u> </u>		Field	Mana	ger: Mark De	ominick		arable Metals Zn Cd, Cu, Pb, (	8	Įž	15	250	E900.0), (E906.0), Idium 224 (E904.0)	ß	50	<del>2</del>	2	SMS		1
ľ	N	Pul			978 23	4 503	3, 818 599.0	702 (cel	l)	Total Recoverable Metals (E200.7): Ni, Zn (E200.8). Ag, Cd, Cu, Pb, 8	TCDD (and all	SO4, NO3+NO2-N, Perchlorate	TDS (SM2540C/E160	Total Dissolved Metals: (E200.7): Ni, Zn (E200.8). Ag, Cd, Cu, F	Gross Alpha(E900.0), Tritum (H-3) (E908.0) Combined Radium 22 Radium 228 (E904.0) CS-137 (E901.0 or E9	Cyenide (SM4500-CN-E / E335 2)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Recoverable Metals	Dissolved Metals:	(160.2 (SM2540D))		
ŀ		`	T	T	<del> </del>	T	T	T		8 2 8	(e)	1	N N	Total Diss (E200.7): (E200.8).	& E E E F	g	52.7	8	Š	8		
1			İ	Sample		# of	Preservative	Sottle #	MS/MSD	# 88	8	l X	8	E 2 2	Gross Al Tritium (Combine Radium CS-137	Ě	ξź	Total	Total	SS		
	Sample Description	Sample I D.	Sampling Date/Time		Container Type	Cont				「豆の河」	12	5	16	500	Q ₹ Q & Q	3	26	2	ု	7		
ŀ				WM	500 mL Poty	3	HNO ₃	95	Yes	X						<u> </u>						
1				WM	1 L Glass Amber	2	None	110	No		Х											
1				WM	500 mL Poly	6	None	140	Yes			Х										48 hours Holding Time NO3 & NO2
Į			1	WM	500 mL Poly	1	None	155	No			T	X			Ī						
ار				WM	500 mL Poly	3	NaOH	220	Yes			П				×						
		Outfall009_20181207_Comp	12/7/2018	WM	2.5 Gal Cube	3	None	225	Yes		T	П			×							Unfiltered and unpreserved analysis, Separate RAD onto
1			60	WM	1 L Glass Amber	3	None	230	Yes			T -		Ţ	1 ^		1					another workorder. Analyze duplicate, not MS/MSD
ŀÌ	Outfall 009		6900	WM	1 Gal Cube	6	None	235	No		1					_	Х					Only test if first or second rain events of the year
1				-	horrosilicate aunie				- Y85	St ft	ne	†	1					×				Sample receiving DO NOT OPEN BAG, Bag to be opened in Mercury Prep using clean procedures
Н				WM			11NO3	313-	ļ	130%	The .	<del> </del>		-	<del> </del>				-	×		In welcury Prep using clean procedures
31				MW	1 L Poly	1	None	185	- No	<b></b>	-	₩	╄		<b></b>		┨					Fitter and preserve w/in 24hrs of receipt at lab
		Outfall009_20181207_Comp_F	12/7/2018/	WM	1 L Poly	3	None	205	Yes	<del>                                     </del>	-	┼	+	×	ļ							Sample receiving DO NOT OPEN BAG. Bag to be opened
ł		Odnamba_20101201_00mp_1	100	, wm	borosilicate vials	3	None	320	Yes			<u> </u>		L					х			in Mercury Prep using clean procedures
1				WM	1 L Glass Amber	2	None	110	No		н	T	1				1					Hold
١		Outfall009_20181207_Comp_Extra	12/7/2018/90	WM	500 mL Poly	2	None	145	No			Н										Hold
H			1 /9	1				Γ			T	Τ	1									
ŀ			<del>                                     </del>								1		1									
ŀ			ļ	<del></del>	<del> </del>	<del> </del>		<del>                                     </del>	<b>†</b>	<b> </b>	<b>†</b>	1	1	1	1	_	1					
1			<u> </u>	<del> </del>	<del> </del>		<b>-</b>	<del> </del>	<u> </u>	-	+	┼	+-				┪					
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L												<u></u>										
1				Comp				Receive	4 By			Date/Ti	ime							Tum-a	ound ti	ime: (Check)
ľ	Relinquished	By Date/Time		Comp	ality .				-	1/					1221	2				24 Hou		72 Hour 10 DayX
1	~ 7	1 , 1	10/200	. /	11 / 1	//	/	(IAA	161	Vef	a	- /	7	7-18	142	<i>5</i> 5	>		l			5 Day Normal
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Ī	Relinquished	By Date/Time		Comp	16:5 any			Receive	d By	الريا		Jate/ ! ?	ime					^		O - wai		t. (Obasil)
1	/	Vera	17.7.1	10	111	7		-		$\mathcal{L}_{i}$		7	$\sim$	17 -	7-18	16	$\sim$	)			r ii kegi •	nty (Check)
ľ	M	Con My	10-17	1	10.5			1 4	100		,			V/C	, , , ,					Intact		On toe:
١	Relinquished	By Date/Time		Comp	any ⁻	**********	···	Receive	d By	7	1	Sates	1411	/		1	12/	2/5	<b>ア</b>			s for 6 months.
١	1	1/20 10	7 10	a	ar la	<i>"</i> S	- 1/20 an	,		- (	_/		WI	1	74 5- 11	•	71	70	'	Data R	equiren	nents: (Check)
1	m	12 Vefa 12	- 1-18	7	05 Ja1	rugr	V = 99				( .	M	V	11	410 V		LA	2		No Lev	el IV	All Level IV:X
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12/20/2010

## TestAmerica Irvine

17461 Derian Ave Suite 100 Irvine, CA 92614-5817

**Chain of Custody Record** 



THE LEADER IN ENVIRONMENTAL TESTING

Phone (949) 261-1022 Fax (949) 260-3297															THE LEADER	N ENVIRONMENTAL TESTING
Client Information (Sub Contract Lab)	Sampler:				PM: tel, Ur	vas	hi				Carrie	er Trackin	g No(s):		COC No: 440-130570.	1
Client Contact: Shipping/Receiving	Phone:			E-M	ashi.p		-	america			State Calif	of Origin: ornia	8		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.								equired (S							Job #: 440-226822-	2
Address: 880 Riverside Parkway,	Due Date Request 12/26/2018	ed:							Analy	ysis R	eques	ted			Preservation A - HCL	
City. West Sacramento	TAT Requested (da	ays):				N. Co	<u>0</u>				İ				B - NaOH C - Zn Acetate	M - Hexane N - None O - AsNaO2
State, Zip: CA, 95605							Standard List w/ Totals			Н					D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O4S Q - Na2SO3 R - Na2S2O3
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO#:				(6)	H	d List			H				1 8	G - Amchlor H - Ascorbic Ac	S - H2SO4
Email:	WO#:				s or N	or No)	tandar			Ш				2	J - Ice J - DI Water	U - Acetone V - MCAA
Project Name: Semiannual Outfall 009 Comp	Project #: 44009879				le (Ye	es or	Sep_P S							ortaine		W - pH 4-5 Z - other (specify)
Site:	SSOW#:				Ѕашр	MS/MSD (Yes	Sox_Se							ofco		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time		Matrix (W=water, S=ao O=waste/oli, BT=Tissue, A=A		Perform MS/W	1613B/1613B_S							Total Number	Specia	Il Instructions/Note:
	_><	09:00	Preserva	tion Code:	X	X								1 2	See OAS Boo	eing w/u to zero, ug/L; Use
Outfall009_20181207_Comp (440-226822-1)	12/7/18	Pacific		Water	$\prod$		X								Boeing glassw	rare.
					H	+		+								-
					11											
Note: Since laboratory accreditations are subject to change, TestAmerica currently maintain accreditation in the State of Origin listed above for analy Laboratories, Inc. attention immediately. If all requested accreditations are	sis/tests/matrix being analy	yzed, the sam	ples must be s	hipped back	o the Te	estA	merica la	aboratory	or other i	instructio	ns will be p	s sample provided.	shipment is Any chang	forwarded ges to accr	d under chain-of-cu editation status sh	istody. If the laboratory does nould be brought to TestAmerica
Possible Hazard Identification					1	San	nple D	isposal	( A fee	may b	e asses	sed if s	amples	are retai	ned longer tha	an 1 month)
Unconfirmed  Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliver	ahle Rank	2		-	Sne		rn To C		equire		al By L	ab	Arci	hive For	Months
			_		Tim	*	olai iric	in dollori	3/4011	cquire	T	Method o	of Shipment			
Empty Kit Relinquished by: Relinquished by:	Date/Time:	Date:	100	Company	P		Receive	rk	um	est	10505		Date/Tim	e: L% 1	5001	Company TASAC
remiquisheady	Date/fijmè: \	0,		Company			Receive	V		4			Date/Tim			Company
Relinquished by:	Date/Time:			Company			Receive	d by:					Date/Tim	e:		Company
Custody Seals Intact: Custody Seal No.:		7- 1				1	Cooler T	emperatu	re(s) °C	and Othe	er Remarks	s:	1.0			

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-226822-2

Login Number: 226822 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Societisioni, Tim		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: Haley & Aldrich, Inc.

Job Number: 440-226822-2

Login Number: 226822

List Source: TestAmerica Sacramento

List Number: 3

List Creation: 12/11/18 05:45 PM

List number	. J
Creator: Her	, David A

Question	Answer	Comment
***************************************		Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.0c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)												
		TCDD	TCDF	PeCDD	PeCDF	PeCF	HxCDD	HxDD	HxCDF					
Lab Sample ID	Client Sample ID	(25-164)	(24-169)	(25-181)	(24-185)	(21-178)	(32-141)	(28-130)	(26-152)					
440-226822-1	Outfall009_20181207_Comp	77	75	65	68	61	71	71	69					
440-226822-1 - RA	Outfall009_20181207_Comp		78											
MB 320-264993/1-A	Method Blank	77	76	65	67	63	74	74	70					
			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)						
		HxDF	HxCF	13CHxCF	HpCDD	HpCDF	HpCDF2	OCDD						
Lab Sample ID	Client Sample ID	(26-123)	(29-147)	(28-136)	(23-140)	(28-143)	(26-138)	(17-157)						
440-226822-1	Outfall009_20181207_Comp	71	84	77	86	79	88	59	-					
440-226822-1 - RA	Outfall009_20181207_Comp													
MB 320-264993/1-A	Method Blank	70	80	75	84	83	85	53						

#### **Surrogate Legend**

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDD = 13C-1,2,3,6,7,8-HxCDD

HxCDF = 13C-1,2,3,4,7,8-HxCDF

HxDF = 13C-1,2,3,6,7,8-HxCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

## Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)								
		TCDD	TCDF	PeCDD	PeCDF	PeCF	HxCDD	HxDD	HxCDF	
Lab Sample ID	Client Sample ID	(20-175)	(22-152)	(21-227)	(21-192)	(13-328)	(21-193)	(25-163)	(19-202)	
LCS 320-264993/2-A	Lab Control Sample	79	81	70	72	60	67	67	64	
LCSD 320-264993/3-A	Lab Control Sample Dup	82	82	71	74	68	77	76	73	
			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)		
		HxDF	HxCF	13CHxCF	HpCDD	HpCDF	HpCDF2	OCDD		
Lab Sample ID	Client Sample ID	(21-159)	(17-205)	(22-176)	(26-166)	(21-158)	(20-186)	(13-199)		
LCS 320-264993/2-A	Lab Control Sample	69	90	78	94	85	98	72	-	
LCSD 320-264993/3-A	Lab Control Sample Dup	73	88	79	91	87	94	63		

#### **Surrogate Legend**

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

PeCF = 13C-2,3,4,7,8-PeCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDD = 13C-1,2,3,6,7,8-HxCDD

TestAmerica Irvine

Page 21 of 23

# **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-2

HxCDF = 13C-1,2,3,4,7,8-HxCDF HxDF = 13C-1,2,3,6,7,8-HxCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

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# Sacramento

Sample Receiving Notes



Job:__

b: 440-226822 Field

in the job folder with the COC.	Custody Seal, Temperature & corrected Temperature & c	otner c	observ	ations.
Notes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / HA	ACCF	o / Ot	her
Notes	, ,	Other		
	Cooler Custody Seal:Seal			
	Sample Custody Seal:			
	Cooler ID:			
	Temp: Observed Corrected	1	0	
	From: Temp Blank  Sample	0		
	NCM Filed: Yes □ No			
	—	Yes	No	NA
	— Perchlorate has headspace?		D	Ø
	Alkalinity has no headspace?	D		Ø
	CoC is complete w/o discrepancies?	Ø		
	Samples received within holding time?	Ø		
	Sample preservatives verified?		D	Dr.
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with?		D'	
	Samples w/o discrepancies?	Ø	П	
	Sample containers have legible labels?	D		
	Containers are not broken or leaking?	D.		
	Sample date/times are provided.	Ø		
	— Appropriate containers are used?	P		
	Sample bottles are completely filled?	Ø		
	Zero headspace?*			Ø
	Multiphasic samples are not present?	Ø		_
	Sample temp OK?	Ø		
	Sample out of temp?	D	Ø	

WVVB

## **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-226822-3

## **Prepared for**

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

22 January 2019







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## **TABLES**

- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



#### . INTRODUCTION

**Task Order Title:** Boeing SSFL NPDES **Contract:** 40458-078 and 40458-083

**MEC^x Project No.:** 1272.003H.01

Sample Delivery Group: 440-226822-3

**Project Manager:** Katherine Miller

Matrix: Water
QC Level: |||

No. of Samples: 1

**No. of Reanalyses/Dilutions:** 0 **Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION** 

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20181207 _Comp	440-226822-1	N/A	Water	12/07/2018 09:00	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



#### II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-226822-3:

- The laboratories received the samples in this SDG on ice and within the temperature limits of ≤6 degrees
   Celsius (°C) and >0°C.
- The laboratories received the sample containers intact.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were not initialed or dated. These cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica St. Louis laboratory for all radionuclide analyses.



## **TABLE 2 - DATA QUALIFIER REFERENCE**

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



## **TABLE 3 - REASON CODE REFERENCE**

Danasa	TABLE 5 - REASON CODE	THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY O
Reason Code	Organic	Inorganic
Н	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
А	Not applicable.	Serial dilution %D was outside control limits.
М	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



#### III. VARIOUS EPA METHODS — RADIONUCLIDES

#### E. Wessling of MEC^x reviewed the SDGs on January 22, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

#### **III.1. HOLDING TIMES:**

The sample was received unpreserved. The sample was acidified and allowed to equilibrate. The sample was prepared within five days of preservation and analyzed following in-growth.

#### III.2. CALIBRATION:

The detector efficiencies were greater than 20% for all applicable isotopes; therefore, no qualifications were required. Carrier/tracer recoveries were within the laboratory control limits. Calibration checks were not verified at a Level III validation.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

Target isotopes were not detected in the method blanks above the MDA. However, a comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 1% level of confidence for total uranium. The detected sample result for total uranium was qualified as nondetect (U). The comparison normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were not significantly different at the 5% level of confidence for gross beta. The detected sample result for gross beta was qualified as estimated (J). No further qualifications were required.

#### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and RPDs, as applicable, were within laboratory-established control limits.

#### **III.3.3.** LABORATORY DUPLICATES:

Laboratory duplicates were not performed on the sample in this SDG.

#### 11.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were performed on the sample in this SDG for total uranium, gross alpha, gross beta, radium-226, radium-228, strontium-90 and tritium. Recoveries and RPDs were within the laboratory control limits.

## **III.4. SAMPLE RESULT VERIFICATION:**

An EPA Level III review was performed on the sample in this data package. As such, the sample results were not verified. Reported nondetects are valid to the MDC.



#### **III.5. FIELD QC SAMPLES:**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

## **III.5.1.** FIELD BLANKS AND EQUIPMENT BLANKS:

This SDG had no identified field blank or equipment blank samples.

## III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

# Validated Sample Result Forms: 4402268223

Analysis Method E900

Sample Name OUTFALL009 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

CAS No Result Total RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier **Notes** Gross Alpha Analytes GROSSALPHA 1.10 0.829 3.00 1.22 pCi/L U Gross Beta Analytes GROSSBETA 2.28 0.829 4.00 1.09 pCi/L В

Analysis Method E901.1

Sample Name OUTFALL009 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

**MDC** Analyte CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Cesium-137 10045-97-3 3.71 7.73 20.0 13.5 pCi/L U U Potassium-40 13966-00-2 U U -23.2 87.3 178 178 pCi/L

Analysis Method E903.0

Sample Name OUTFALL009_20181207_COMP Matrix Type: WM Result Type: TRO

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

Total RL**MDC** Analyte CAS No Result Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes 0.117 Radium-226 13982-63-3 0.162 0.274 pCi/L 1.00

Analysis Method E904.0

Sample Name OUTFALL009 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

**Analyte** CAS No Result Total RL**MDC** Result Lab Validation Validation Uncert. Units Qualifier Value Qualifier Notes Radium-228 15262-20-1 0.407 0.416 1.00 0.675 pCi/L

Friday, January 25, 2019 Page 1 of 2

Analysis Method E905.0

Sample Name OUTFALL009 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

**MDC Analyte** CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units **Qualifier Qualifier** Notes Strontium-90 10098-97-2 0.0693 0.367 3.00 0.644 pCi/L

Analysis Method E906.0

Sample Name OUTFALL009 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

CAS No Total RL**MDC Analyte** Result Result Lab Validation Validation Value Uncert. Units **Oualifier** Qualifier Notes -198 Tritium 10028-17-8 193 500 368 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL009_20181207_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

RL**MDC Analyte** CAS No Result **Total** Result Lab Validation Validation Uncert. Units Qualifier Value **Qualifier Notes** Total Uranium **URANIUM** 0.490 0.363 1.00 0.339 pCi/L

Analysis Method RADIUM

Sample Name OUTFALL009 20181207 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/7/2018 9:00:00 AM Validation Level: 9

**Lab Sample Name:** 440-226822-1

RL**MDC** Analyte CAS No Result Total Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-226 & 228 RADIUM226228 0.675 0.445499 U

Friday, January 25, 2019 Page 2 of 2



THE LEADER IN ENVIRONMENTAL TESTING

# **ANALYTICAL REPORT**

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226822-3

Client Project/Site: Semiannual Outfall 009 Comp

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Ushi Patel

Authorized for release by: 1/10/2019 10:23:33 PM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Usli fatel

Urvashi Patel Manager of Project Management 1/10/2019 10:23:33 PM Ξ

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Lab Sample ID			Collected	Received
440-226822-1	Outfall009_20181207_Comp	Water	12/07/18 09:00	12/07/18 21:05

## **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Job ID: 440-226822-3

**Laboratory: TestAmerica Irvine** 

Narrative

Job Narrative 440-226822-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/7/2018 9:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.1° C, 2.6° C and 4.1° C.

#### Receipt Exceptions

The reference method requires samples to be preserved to a pH <2. The following samples were received with insufficient preservation at a pH of 7: Outfall009_20181207_Comp (440-226822-1), Outfall009_20181207_Comp (440-226822-1[MS]) and Outfall009_20181207_Comp (440-226822-1[MSD]). The samples were preserved with 10mL of nitric acid reagent #1598157, at 16:00 on 12/11/18 to reach the appropriate pH of 2 in the laboratory.

#### RAD

Method(s) ExtChrom: Uranium Prep Batch 160-405494:

Samples Outfall009_20181207_Comp (440-226822-1), Outfall009_20181207_Comp (440-226822-1[MS]) and Outfall009_20181207_Comp (440-226822-1[MSD]) were prepared at a reduced aliquot due to gray and yellow discoloration and cloudiness.

Method(s) PrecSep_0: Radium-228 Prep Batch 405521:

The following samples were prepared at a reduced aliquot due to sediment and discoloration: Outfall009_20181207_Comp (440-226822-1), Outfall009_20181207_Comp (440-226822-1[MS]) and Outfall009_20181207_Comp (440-226822-1[MSD]).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-405504:

The following samples were prepared at a reduced aliquot due to sediment and discoloration: Outfall009_20181207_Comp (440-226822-1), Outfall009_20181207_Comp (440-226822-1]MSD]), and Outfall009_20181207_Comp (440-226822-1]MSD]).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-405504:

The following samples have a different barium carrier recovery than the accompanying Ra-228 analysis method. This is due to the planchets getting re-tared and re-weighed after the separation step.

Outfall009_20181207_Comp (440-226822-1), Outfall009_20181207_Comp (440-226822-1[MS]) and Outfall009_20181207_Comp (440-226822-1[MSD])

Method(s) PrecSep-7: Strontium-90 Prep Batch 405485:

The following samples were prepared at a reduced aliquot.

 $Outfall009_20181207_Comp~(440-226822-1),~Outfall009_20181207_Comp~(440-226822-1[MS])~and~Outfall009_20181207_Comp~(440-226822-1[MSD])$ 

Job number 440-226822, 440-226863, 440-226867, and 440-226869 contained samples with a yellow, cloudy matrix.

Sample 440-226830-I-1 contained black sediment.

The samples in job 280-117873 contained red sediment.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Lab Sample ID: 440-226822-1

**Matrix: Water** 

Client Sample ID: Outfall009	20181207	Comp
Date Collected: 12/07/18 09:00		

Date Received: 12/07/18 21:05

Method: 900.0 - Gro	oss Alpha	and Gros	s Beta Rad							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.10	U	0.820	0.829	3.00	1.22	pCi/L	12/27/18 10:23	12/31/18 09:30	1
Gross Beta	2.28		0.797	0.829	4.00	1.09	pCi/L	12/27/18 10:23	12/31/18 09:30	1

	Cou Unce									
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.71	U	7.72	7.73	20.0	13.5	pCi/L	12/12/18 02:07	12/12/18 06:14	1
Potassium-40	-23.2	U	87.2	87.3		178	pCi/L	12/12/18 02:07	12/12/18 06:14	1

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.117	U	0.162	0.162	1.00	0.274	pCi/L	12/13/18 11:03	01/04/19 08:38	1
Carrier		Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	49.9		40 - 110					12/13/18 11:03	01/04/19 08:38	1

Method: 904.0 - Ra	dium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.407	U	0.415	0.416	1.00	0.675	pCi/L	12/13/18 13:19	12/21/18 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	74.9		40 - 110					12/13/18 13:19	12/21/18 14:10	
Y Carrier	80.7		40 - 110					12/13/18 13:19	12/21/18 14:10	1

Method: 905 - Strontium-90 (GFPC)											
	,	Count	Total								
			Uncert.	Uncert.							
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Strontium-90	0.0693	Ū	0.367	0.367	3.00	0.644	pCi/L	12/13/18 08:52	12/31/18 11:18	1	
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac	
Sr Carrier	72.7		40 - 110					12/13/18 08:52	12/31/18 11:18	1	
Y Carrier	89.7		40 - 110					12/13/18 08:52	12/31/18 11:18	1	

Method: 906.0 - Tritium, Total (LSC)										
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC (	Unit	Prepared	Analyzed	Dil Fac
Tritium	-198	$\overline{U}$	193	193	500	368 p	oCi/L	01/07/19 11:23	01/07/19 18:31	1

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Lab Sample ID: 440-226822-1

**Matrix: Water** 

Date Collected: 12/07/18 09:00 Date Received: 12/07/18 21:05

Client Sample ID: Outfall009_20181207_Comp

Method: A-01-R -	Isotopic Ur	anium (Al	pha Spectr	ometry)						
	•	•	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.490		0.362	0.363	1.00	0.339	pCi/L	12/13/18 09:58	12/14/18 17:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	60.9		30 - 110					12/13/18 09:58	12/14/18 17:42	

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
SC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### **Protocol References:**

DOE = U.S. Department of Energy EPA = US Environmental Protection Agency None = None

## **Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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## **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Lab Sample ID: 440-226822-1

**Matrix: Water** 

Client Sample ID: Outfall009	20181207	Comp
D - ( - O - II ( - I - 40/07/40 00 00		

Date Collected: 12/07/18 09:00 Date Received: 12/07/18 21:05

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	407614	12/27/18 10:23	MRB	TAL SL
Total/NA	Analysis	900.0		1			408344	12/31/18 09:30	CDR	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 mL	405196	12/12/18 02:07	MPT	TAL SL
Total/NA	Analysis	901.1		1			405201	12/12/18 06:14	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.02 mL	1.0 g	405504	12/13/18 11:03	MMO	TAL SL
Total/NA	Analysis	903.0		1			408962	01/04/19 08:38	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.02 mL	1.0 g	405521	12/13/18 13:19	MMO	TAL SL
Total/NA	Analysis	904.0		1	1.0 mL	1.0 mL	406931	12/21/18 14:10	CDR	TAL SL
Total/NA	Prep	PrecSep-7			500.53 mL	1.0 g	405485	12/13/18 08:52	HET	TAL SL
Total/NA	Analysis	905		1			408344	12/31/18 11:18	CDR	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.1 mL	1.0 g	409225	01/07/19 11:23	JDL	TAL SL
Total/NA	Analysis	906.0		1			409354	01/07/19 18:31	RTM	TAL SL
Total/NA	Prep	ExtChrom			250.63 mL	1.0 mL	405494	12/13/18 09:58	KNF	TAL SL
Total/NA	Analysis	A-01-R		1			405839	12/14/18 17:42	ALS	TAL SL

#### **Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica Job ID: 440-226822-3

**Client Sample ID: Lab Control Sample** 

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Lab Sample ID: LCSB 160-407614/3-A

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-407614/1-A		Client Sample ID: Method Blank
Matrix: Water		Prep Type: Total/NA
Analysis Batch: 408333	•	 Prep Batch: 407614

			Count	ıotai						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.6321	U	0.677	0.680	3.00	1.10	pCi/L	12/27/18 10:23	12/31/18 09:20	1
Gross Beta	-0.1631	U	0.514	0.514	4.00	0.930	pCi/L	12/27/18 10:23	12/31/18 09:20	1

Lab Sample ID: LCS 160-4070 Matrix: Water			Clie	ent San	•	Lab Control Prep Type: T				
Analysis Batch: 408333									Prep Batch:	407614
				Total					•	
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Gross Alpha	50.9	46.07		6.69	3.00	1.74	pCi/L	90	73 - 133	

Matrix: Water							<b>Prep Type: Total/NA</b>
Analysis Batch: 408333							<b>Prep Batch: 407614</b>
			Total				•
	Spike	LCSB LCSB	Uncert.				%Rec.
Analyte	Added	Result Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits

	Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
	Gross Beta	87.1	86.97		9.22	4.00	0.929	pCi/L	100	75 - 125	
- (	_ _										
	Lab Sample ID: 440-226822-1 MS	Client Sample ID: Outfall009_20181207_Comp									
	Matrix: Water		Prep Type: Total/NA								

Analysis Bato	ch: 40834	4								Prep Batch: 40761	4
						Total				•	
	Sample	Sample	Spike	MS	MS	Uncert.				%Rec.	
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	
Groce Alpha	1 10	П	50.0	20 10		5.35	3 00	1 02 pCi/l	72	60 140	_

	Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits			
	Gross Alpha	1.10	U	50.9	38.18		5.35	3.00	1.02	pCi/L	73	60 - 140			
	_														
Lab Sample ID: 440-226822-1 MSBT									Client Sample ID: Outfall009_20181207_Comp						
	Matrix: Water						Prep Type	: Tota	al/NA						

Analysis Bate	ch: 40834	4									Prep Bat	tch: 407614
						Total					•	
	Sample	Sample	Spike	MSBT	MSBT	Uncert.					%Rec.	
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Gross Beta	2.28		87.1	88.52		9.38	4.00	1.06	pCi/L	99	60 - 140	

Lab Sample ID: 440-226822-1 MSBTD	Client Sample ID: Outfall009_20181207_Comp						
Matrix: Water			Prep Type: Total/NA				
Analysis Batch: 408344			Prep Batch: 407614				
		Total					
Sample Sample Spike	MSBTD MSBTD	Uncert.	%Rec. RER				

	Sample	Sample	Spike	MSBTD	MSBTD	Uncert.					%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	RER	Limit
Gross Beta	2.28		87.1	87.44		9.26	4.00	1.04	pCi/L	98	60 - 140	0.06	1

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Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-226822-1 MSD Client Sample ID: Outfall009_20181207_Comp **Matrix: Water Prep Type: Total/NA** Analysis Batch: 408344 Prep Batch: 407614

						Total						
	Sample	Sample	Spike	MSD	MSD	Uncert.				%Rec.		RER
Analy	yte Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Gross	s Alpha 1.10	U	50.9	46.14		6.30	3.00	1.16 pCi/L	88	60 - 140	0.68	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-405196/1-A Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 40	05206								Prep Batch:	405196
			Count	Total					•	
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.771	U	6.28	6.28	20.0	11.0	pCi/L	12/12/18 02:07	12/12/18 06:12	1

Lab Sample ID: LCS 160-405196/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 405207 Prep Batch: 405196** 

				Total						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Americium-241	136000	124900		14400		350	pCi/L	92	90 - 111	
Cesium-137	45100	42160		4230	20.0	168	pCi/L	94	90 - 111	
Cobalt-60	31300	30340		3000		66.0	pCi/L	97	89 - 110	

Lab Sample ID: 280-117873-B-1-B DU **Client Sample ID: Duplicate Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 405207** 

					Total				•		
	Sample	Sample	DU	DU	Uncert.						RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit
Cesium-137	-3.30	U —	5.059	U	8.98	20.0	15.1	pCi/L		0.45	1
Potassium-40	1.18	U	25.26	U	141		185	pCi/L		0.08	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-405504/20-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA Analysis Batch: 408962 Prep Batch: 405504

Count Total мв мв Uncert. Uncert. Result Qualifier (2σ+/-) Analyte  $(2\sigma + / -)$ RI **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.09638 U 0.181 0.182 1.00 0.323 pCi/L <u>12/13/18 11:03</u> <u>01/04/19 08:39</u>

MB MB Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac <u>12/13/18 11:03</u> <u>01/04/19 08:39</u> Ba Carrier 51.3 40 - 110

Prep Type: Total/NA

**Prep Batch: 405196** 

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-405504/1-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 408961** Prep Batch: 405504 Total

Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 15.1 13.80 1.60 1.00 0.236 pCi/L 91 68 - 137

LCS LCS %Yield Qualifier Carrier I imits Ba Carrier 63.4 40 - 110

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp Prep Type: Total/NA

**Matrix: Water** Analysis Batch: 408962

Prep Batch: 405504 Total Sample Sample MS MS Uncert. %Rec. **Spike** 

Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Radium-226 0.117 U 15.1 14.50 1.77 1.00 0.317 pCi/L 95 75 ₋ 138 MS MS Carrier %Yield Qualifier Limits

Client Sample ID: Outfall009_20181207_Comp Lab Sample ID: 440-226822-1 MSD

**Matrix: Water** 

Ba Carrier

**Analysis Batch: 408962** Total

40 - 110

Sample Sample Spike MSD MSD Uncert. %Rec. **RER** Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Radium-226 75 - 138 0.117 U 1.84 1.00 0.365 pCi/L 99 0.15 15.1 15.06

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 43.1 40 - 110

45.4

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-405521/20-A Client Sample ID: Method Blank Prep Type: Total/NA **Matrix: Water Analysis Batch: 406931 Prep Batch: 405521** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 -0.01266 Ū 0.314 0.314 1.00 0.566 pCi/L 12/13/18 13:19 12/21/18 14:11

MB MB Carrier %Yield Qualifier Limits Prepared Dil Fac Analyzed Ba Carrier 90.0 40 - 110 12/13/18 13:19 12/21/18 14:11 81.9 40 - 110 12/13/18 13:19 12/21/18 14:11 Y Carrier

TestAmerica Irvine

1/10/2019

Prep Type: Total/NA

Prep Batch: 405504

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-405521/1-A

**Matrix: Water** 

Analysis Batch: 406931

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 405521** 

Total Spike LCS LCS Uncert. %Rec. **Analyte** Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-228 12.1 13.92 1.00 0.603 pCi/L 56 - 140 1.64 115

LCS LCS

Carrier %Yield Qualifier I imits Ba Carrier 90.6 40 - 110 Y Carrier 76.3 40 - 110

Client Sample ID: Outfall009_20181207_Comp

144

Prep Type: Total/NA

**Prep Batch: 405521** 

45 - 150

Lab Sample ID: 440-226822-1 MS

**Matrix: Water** 

Radium-228

**Analysis Batch: 406931** 

Total Sample Sample **Spike** MS MS Uncert. %Rec. **Analyte** Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits

17.84

Count

12.1

MS MS

Carrier %Yield Qualifier Limits 70.2 Ba Carrier 40 - 110 71.4 40 - 110 Y Carrier

0.407 U

Lab Sample ID: 440-226822-1 MSD

**Matrix: Water** 

Analysis Batch: 406931

Client Sample ID: Outfall009 20181207 Comp

Prep Type: Total/NA

**Prep Batch: 405521** 

Total MSD MSD %Rec. **RER** Sample Sample Spike Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Radium-228 0.407 U 12.1 1.68 1.00 0.666 pCi/L 45 - 150 1.09 13.69 109

2.13

1.00

0.816 pCi/L

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 72.0 40 - 110 80.7 40 - 110 Y Carrier

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-405485/17-A

**Matrix: Water** 

Analysis Batch: 408308

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 405485

MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Strontium-90 1.005 0.356 0.365 3.00 0.482 pCi/L 12/13/18 08:52 12/31/18 12:21

Total

ΜB MB

Carrier **%Yield Qualifier** Limits Prepared Dil Fac Analyzed Sr Carrier 87.5 40 - 110 12/13/18 08:52 12/31/18 12:21 40 - 110 12/13/18 08:52 12/31/18 12:21 Y Carrier 93.1

TestAmerica Irvine

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp TestAmerica Job ID: 440-226822-3

### Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-405485/1-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 408344 Prep Batch: 405485 Total

Spike LCS LCS Uncert. %Rec. **Analyte** Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Strontium-90 16.3 16.09 1.66 3.00 0.590 pCi/L 99 75 - 125

LCS LCS Carrier %Yield Qualifier I imits Sr Carrier 86.5 40 - 110 Y Carrier 91.6 40 - 110

Lab Sample ID: 440-226822-1 MS Client Sample ID: Outfall009_20181207_Comp

**Matrix: Water** Prep Type: Total/NA Analysis Batch: 408344 **Prep Batch: 405485** 

Total Sample Sample **Spike** MS MS Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Strontium-90 0.0693 U 16.2 16.08 1.68 3.00 0.616 pCi/L 99 19 - 150

MS MS Carrier %Yield Qualifier Limits Sr Carrier 79.7 40 - 110 Y Carrier 93.1 40 - 110

Lab Sample ID: 440-226822-1 MSD Client Sample ID: Outfall009 20181207 Comp

**Matrix: Water** Prep Type: Total/NA **Analysis Batch: 408333** Prep Batch: 405485

Total MSD MSD %Rec. **RER** Sample Sample Spike Uncert. **MDC** Unit Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL %Rec Limits RER Limit Strontium-90 0.0693 U 1.55 3.00 0.596 pCi/L 19 - 150 0.54 16.2 14.35 88

MSD MSD Carrier %Yield Qualifier Limits Sr Carrier 72.0 40 - 110 93.8 40 - 110 Y Carrier

#### Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-409225/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 409354

Count Total MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Tritium -243.2 Ū 191 192 500 374 pCi/L 01/07/19 11:23 01/07/19 17:46

TestAmerica Irvine

Prep Batch: 409225

**Prep Batch: 409225** 

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-409225/2-A

Matrix: Water

Analysis Batch: 409354

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 409225

Total Spike LCS LCS Uncert. %Rec. Added **Analyte** Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Tritium 2650 2230 404 500 380 pCi/L 84

Lab Sample ID: 440-226822-1 MS

Client Sample ID: Outfall009_20181207_Comp

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 409354

-198 U

Tritium

Uranium-232

84.0

Total
Sample Sample Spike MS MS Uncert. %Rec.
Analyte Result Qual Added Result Qual (2σ+/-) RL MDC Unit %Rec Limits

Lab Sample ID: 440-226822-1 MSD

Matrix: Water

Analysis Batch: 409354

Client Sample ID: Outfall009_20181207_Comp
Prep Type: Total/NA
Prep Batch: 409225

443

500

384 pCi/L

100

67 - 130

Total Spike MSD MSD %Rec. **RER** Sample Sample Uncert. Added **MDC** Unit Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL %Rec Limits RER Limit Tritium -198 U 2660 2568 440 500 392 pCi/L 97 67 ₋ 130 0.09

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

2650

2644

Lab Sample ID: MB 160-405494/1-A

Matrix: Water

Analysis Batch: 405954

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 405494

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Total Uranium 0.1880 Ū 0.175 0.175 1.00 0.191 pCi/L 12/13/18 09:58 12/14/18 17:43

 MB MB

 Tracer
 %Yield Qualifier
 Limits
 Prepared
 Analyzed
 Dil Fac

 Uranium-232
 87.7
 30 - 110
 12/13/18 09:58
 12/14/18 17:43
 1

Lab Sample ID: LCS 160-405494/2-A Client Sample ID: Lab Control Sample

30 - 110

Matrix: Water Prep Type: Total/NA Analysis Batch: 405955 Prep Batch: 405494

Total Spike LCS LCS Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Uranium-234 12.7 12.06 1.52 1.00 0.201 pCi/L 95 75 - 125 75 - 125

 Uranium-238
 13.0
 12.91
 1.59
 1.00
 0.136
 pCi/L
 99

 LCS LCS

 Tracer
 %Yield Qualifier
 Limits

TestAmerica Irvine

### **QC Sample Results**

Client: Haley & Aldrich, Inc.

Analysis Batch: 405841

**Matrix: Water** 

Project/Site: Semiannual Outfall 009 Comp

Lab Sample ID: 440-226822-1 MS

TestAmerica Job ID: 440-226822-3

Client Sample ID: Outfall009_20181207_Comp

Client Sample ID: Outfall009_20181207_Comp

Limits

65 - 146

68 - 143

RER

0.09

0.06

Limit

Prep Type: Total/NA

Prep Batch: 405494

					Total					
	Sample Sample	Spike	MS	MS	Uncert.					%Rec.
Analyte	Result Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
Uranium-234	0.347	25.4	23.35		3.51	1.00	0.550	pCi/L	90	65 - 146
Uranium-238	0.157 U	26.0	25.55		3.72	1.00	0.549	pCi/L	98	68 - 143

MS MS Tracer %Yield Qualifier Limits Uranium-232 30 - 110 40.8

Lab Sample ID: 440-226822-1 MSD

**Matrix: Water** 

**Prep Type: Total/NA** Analysis Batch: 405842 **Prep Batch: 405494** Total Sample Sample **Spike** MSD MSD Uncert. %Rec. **RER** 

Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Uranium-234 0.347 25.5 24.00 3.98 1.00 0.747 pCi/L 93 Uranium-238 0.157 U 26.0 25.07 4.09 1.00 0.694 pCi/L 96 MSD MSD

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Tracer %Yield Qualifier Limits Uranium-232 30.3 30 - 110

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

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Prep	Batch:	405196
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-405196/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-405196/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
280-117873-B-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

#### **Prep Batch: 405485**

Lab Sample ID 440-226822-1	Client Sample ID Outfall009_20181207_Comp	Prep Type Total/NA	Matrix Water	Method PrecSep-7	Prep Batch
MB 160-405485/17-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-405485/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	PrecSep-7	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	PrecSep-7	

#### **Prep Batch: 405494**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	ExtChrom	
MB 160-405494/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-405494/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	ExtChrom	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	ExtChrom	

#### **Prep Batch: 405504**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	PrecSep-21	
MB 160-405504/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-405504/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	PrecSep-21	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	PrecSep-21	

#### **Prep Batch: 405521**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	PrecSep_0	· ———
MB 160-405521/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-405521/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	PrecSep_0	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	PrecSep_0	

#### **Prep Batch: 407614**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	Evaporation	
MB 160-407614/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-407614/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-407614/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	Evaporation	
440-226822-1 MSBT	Outfall009_20181207_Comp	Total/NA	Water	Evaporation	
440-226822-1 MSBTD	Outfall009_20181207_Comp	Total/NA	Water	Evaporation	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	Evaporation	

#### **Prep Batch: 409225**

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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226822-1	Outfall009_20181207_Comp	Total/NA	Water	LSC_Dist_Susp	

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## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

### Rad (Continued)

### Prep Batch: 409225 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-409225/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-409225/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-226822-1 MS	Outfall009_20181207_Comp	Total/NA	Water	LSC_Dist_Susp	
440-226822-1 MSD	Outfall009_20181207_Comp	Total/NA	Water	LSC_Dist_Susp	

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### **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

#### **Qualifiers**

#### Rad

Qualifier Qualifier Description
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U Result is less than the sample detection limit.

#### **Glossary**

Abbreviation	These commonly used abbreviations may or may not be present in this report.
n	Listed under the "D" column to designate that the result is reported on a dry weight has

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

PQL Practical Quantitation Limit

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

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### **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226822-3

Project/Site: Semiannual Outfall 009 Comp

#### **Laboratory: TestAmerica Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	<b>Expiration Date</b>
California	State Program	9	CA ELAP 2706	06-30-19

### Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-19
lowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18 *
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

1/10/2019

TestAmerica Irvine

^{*} Accreditation/Certification renewal pending - accreditation/certification considered valid.

### **CHAIN OF CUSTODY FORM**

Client Nam	- 16 dance			T		Project:			R	R	S/F	R,	R	R	R	R	R	R			ANALYSIS REQUIRED
				В		SSFL NPDE	s		<u> </u>	T	T	Т	T	1 6	Π	1	[	T			
	Idrich, Inc			1		rmit 2018					15	.		otal (-) (-) (-) (-) (-) (-) (-) (-) (-) (-)			=			Ì	
	on Center Rd Suite 300			Semiannu	al Out	fall [003-007	, 009, 0	10]		1	(E300)			, Gross Beta(E900 0), Sr-90 (E905 0), Total 26 (E903.0 or E903.1) & Oly Uranium (E908.0), K-4 (901.1)			55	÷.			
San Diego,	ca Contact: Urvashi Patel	TestAmerica's services		4		utfall 009			1	1	1 5	1		8688	1	1	Mercury (E245	(E245		1	
	ian Ave Suite #100	CoC shall be performe	d in			Comp			l F	E E	l #		F.	50.00			ž	<u>a</u>			
Irvine CA 9		accordance with the Ta Blanket Service Agree		.[					Š	6	5		Se,	E C E	122	ے	हू	<u></u>			
Tel 949-26		18-TestAmerica by and	between	L			to a Battella		g	l m	15		S,	288		2	ž	Ď		l	
Cell 949-3		Haley & Aldrich, Inc., if subsidiaries and affilia		1		iger Kather			2 0	8	1 %	1_	₽ €	1 8 8 E E	1	188	얥	. Mercury	2	1	Comments
0011 040 01		TestAmenca Laborato		520,28	9.860	6, 520.904.6	944 (cel	1)	age 4.	l e	Įż	,   <u>2</u>	is i	66868	Z	۱ <u>.</u>	şe ş	SE	g		
				l					2 0	ğ	0	1 2	od Metais Zn Cd, Cu,	88 5 2	18	SE	9	N N	8	1	
Sampler: D	Dani Smith			Field	Mana	ger: Mark D	ominick		음등등	8	1 ₹	ģ	ទ្ធិភូន	E900.0), Gross (E906.0), Sr-90 adium 226 (E90 (E904.0), Uran 1.0 or E901.1)	हि	88	윤	8	80	ĺ	
	leat			978 23	4 503	3, 818 599.0	702 (cel	l)	Total Recoverable Metals (E200.7): Ni, Zn (E200.8), Ag, Cd, Cu, Pb, S	(and all congeners) (E1613B)	SO4, NO3+NO2-N, Perchlorate	TDS (SM2540C/E160 1)	Total Dissolved Metais: (E200.7); Ni, Zn (E200.8), Ag, Cd, Cu, F	Gross Alpha(E900.0), G Tritum (H-3) (E906.0), Combined Radium 226 Radium 228 (E904.0), CS-137 (E901.0 or E90	Cyemide (SMA500-CN-E / E335 2)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Recoverable Metals	Dissolved Metals	TSS (160.2 (SM2540D))		
	<u>- 1                                   </u>	T	T			T	T		] ફ્રેજે	lē.	3	.   ₹	Total Diss (E200.7): (E200.8).	A E E E E	ğ	5 2	×	ä	8	l	
1		į	Sample		# of	Preservative	Sottle #	MS/MSD	# 88	TCDD	l X	18	288	Gross A Tritum ( Combin Radium CS-137	Ě	[5 ⊀	3	Totai	SS	ĺ	
Sample Description	Sample I D.	Sampling Date/Time		Container Type	Cont	1		l	「豆頭頭	15	5	15	医原原	9 E 2 & 8	3	2.6	10	ပို	12		
Description		<u> </u>	WM	500 mL Poty	3	HNO ₂	95	Yes	X		1				Γ						
			WM	1 L Glass Amber	2	None	110	No		Х		1			Г	T					
			WM	500 mL Poly	6	None	140	Yes		†	X	$\top$			$\vdash$						48 hours Holding Time NO3 & NO2
1		1	WM	500 mL Poly	1	None	155	No	<del>                                     </del>	<del>                                     </del>	+	T _x	<del>                                     </del>	<u> </u>	1				-		
.1			ļ		3	NaOH	220	Yes	<b></b>	+	+-	+	<del> </del>	<del> </del>	×						
7	Outfall009_20181207_Comp	12/7/2018/	WM	500 mL Poly	<del> </del> -		225	Yes	<del> </del>	+	╂	┼		<del> </del>	<del>  ^</del>	<del> </del>					Unfiltered and unpreserved analysis, Separate RAD onto
	Odtiai009_20161207_C011b	1 22	WM	2 5 Gal Cube	3	None	<del> </del>	<del> </del>	<u> </u>	+	+	+		×	<b>-</b>	+					another workorder, Analyze duplicate, not MS/MSD
'.1		10900	WM	1 L Glass Amber	3	None	230	Yes		1	1_	ــــــ		<del> </del>	<del> </del>	1					
Outfall 009		1	WM	1 Gal Cube	6	None	235	No							<u> </u>	Х					Only test if first or second rain events of the year Sample receiving DO NOT OPEN BAG. Bag to be opened
, [		1	WM	horosilicate vinte	2	111103	315-	785	134 ft	w	1				1		x			i	in Mercury Prep using clean procedures
			WM	1 L Poly	1	None	185	- No	1308	THE.	+	1	<del>                                     </del>	<del> </del>		<b>!</b>			Х		
5{		<del> </del>	WW	1 L Poly	3	None	205	Yes	<del> </del>	-	+	+	×		_	1					Filter and preserve w/in 24hrs of receipt at lab
	Outfall009_20181207_Comp_F	12/7/2018/	AAM	1 LFGiy		<del> </del>	<del> </del>	<del> </del>	<del>                                     </del>	+	+	+	<del>                                     </del>		<del> </del>	<del>                                     </del>		х			Sample receiving DO NOT OPEN BAG, Bag to be opened
1	Outstand Toler Toler Toler	1000	WM.	borosilicate vials	3	None	320	Yes		Ь.										<u> </u>	in Mercury Prep using clean procedures
1		40000040	WM	1 L Glass Amber	2	None	110	No		н			1	<u> </u>						<u> </u>	Hoid
	Outfall009_20181207_Comp_Extra	12/7/2018/94	WM	500 mL Poly	2	None	145	No	1 .		н				L_	<u> </u>					Hold
<u> </u>		1	1								Т									l	
		<del>                                      </del>	<del> </del>	<del> </del>			<del>                                     </del>	<b>-</b>	<u> </u>	1	1	1		1	Г						
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				<u> </u>		<u></u>	<u> L</u>	<u> </u>	<u> </u>	Ш.	<u></u>		J	<u> </u>	L					<u> </u>	
Relinquished	By Date/Time		Comp	any			Receive	i By			Date/T	ime									time* (Check)
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)	440-2 <u>26</u> 82	2 Chain of Cus	tody																		

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Cooler Temperature(s) °C and Other Remarks:

TestAmerica TestAmerica

		Carrier and Control
lestA	merica	Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

Δ Yes Δ No

Chain of Custody Record

Phone (949) 261-1022 Fax (949) 260-3297										1100			IBIR (1019 BI)BI 181	118 11818 1181 1881		THE LEADER IN E	NVIRONMENTA	AL TESTING
Client Information (Sub Contract Lab)	Sampler:				ь РМ: atel, l		shi					Carrier Tra	cking No(s):	:		COC No: 440-130568,1		
Shipping/Receiving	Phone:			E-I	Mail:				at a set a se	-50-005		State of Ori			-	Page:		
Company: TestAmerica Laboratories, Inc.				Tui.				estame s Require				California	1		_	Page 1 of 1 Job #:		
Address:	Due Date Request	-4:			St	tate I	Progr	ram - C	aliforni	а						440-226822-1		
13715 Rider Trail North, ,	12/19/2018	ea:							Δι	nalveie	Ren	uested			٦	Preservation Co	des:	
City: Earth City	TAT Requested (d	ays):			100	20	П			larysic	T T	dested	\Box			A - HCL B - NaOH	M - Hexane N - None	
State, Zip: MO, 63045																C - Zn Acetate D - Nitric Acid E - NaHSO4	O - AsNaO2 P - Na2O4S Q - Na2SO3	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:															F - MeOH G - Amchlor	R - Na2S2O3 S - H2SO4	3
Email:	WO #:				or No	No)	06-ш									H - Ascorbic Acid	T - TSP Dode U - Acetone	ecahydrate
Project Name: Semiannual Outfall 009 Comp	Project #: 44009879				(Yes	s or h	Strontium-90								ē	J - DI Water K - EDTA L - EDA	V - MCAA W - pH 4-5 Z - other (spe	ocify)
Site:	SSOW#:				Sample	ISD (Ye	Sep_7 St					h			벁	Other:	E sine (ope	Jony
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=so O=waste/oil, BT=Tissue, A=A	믕	Perform MS/M	905_Sr90/PrecS								Total Number		1 1920 112	
		><		ation Code:		X		FOR A PE	in with a	AR IN		259 1234	W- 12	1	+	Special In	structions/N	Note:
Outfall009_20181207_Comp (440-226822-1)	12/7/18	09:00 Pacific		Water	T		X								2	Boeing SSFL; DO	NOT FILTER;	use prep
Outfall009_20181207_Comp (440-226822-1MS)	12/7/18	09:00 Pacific	MS	Water			x	\top				\top			2 1	date from preserv Boeing SSFL; DO	NOT FILTER:	use prep
Outfall009_20181207_Comp (440-226822-1MSD)	12/7/18	09:00 Pacific	MSD	Water			X								2 1	date from preserv Boeing SSFL; DO date from preserv	NOT FILTER;	use prep
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lote: Since laboratory accreditations are subject to change, TestAmerica urrently maintain accreditation in the State of Origin listed above for anal- aboratories, Inc. attention immediately. If all requested accreditations are	Laboratories, Inc. places the ysis/tests/matrix being analy a current to date, return the	e ownership o zed, the samp signed Chain	f method, ana oles must be s of Custody at	llyte & accredi shipped back t testing to said	tation to the	comp TestA licano	liance merica ce to T	upon ou a laborat estAmer	it subcon ory or oth ica Labo	tract laborer instru	ratories. ctions wi	This samp	ole shipmen ed. Any cha	it is forwarded	d un	der chain-of-custoo tation status should	y. If the laborat be brought to T	tory does not estAmerica
Possible Hazard Identification												sessed i	f sample:	s are retai	ine	d longer than 1	month)	
Unconfirmed Deliverable Requested: I, II, IJI, IV, Other (specify)	Primary Delivera	ible Rank:	2	_	_		Re	eturn To	Client	C Requi	Dis	posal By				e For	Months	
Empty Kit Relinguished by:	1 1	Date:			Tir	ne:				oqui	. STHERIL		d of Shipme	not:				
telinquished by:	Patel/Tymb:	11 13	PM .	Company	11/4		Receiv	wed by		k	-	Metilo	Date/T		10	Ib	Company	
elinquished by:	Date/time:	11	100	Company	11/	٧	Receiv	ved by:	upan:	0	-		Date/T	ime:	10	01:10	TA S	TL
delinquished by:	Date/Time:			Company		-	Receiv	ved by:					Date/T				Company	
Custody Seals Intact: Custody Seal No.:					_		Capta		anti-santa t	00 1 0							and the second	

Page 23 of 28

TestAmerica Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817











Chain of Custody Record



Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by: Relinquished by: Date/Time: Date/Time: Date/Time: Custody Seal No.: Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Received by: Date/Time: Date/Time: Company Company Company Received by: Date/Time: Company Company Company Company Company Company Company Custody Seal No.:	Phone (949) 261-1022 Fax (949) 260-3297																	THE LEADER IN I	ENVIRONMENTAL TESTIN
SheprimpReceiving	Client Information (Sub Contract Lab)	Sampler:					Jrvas	shi						Carrier Tra	acking N	lo(s):			
Teacher Teach Teacher Teache	Shipping/Receiving	Phone:						101					-					The same of the sa	
Additional Content 1987					ur									Californi	ia				
Columbia Columbia	Address:	Due Data Reguest	nd:			S	tate F	Progr	ram -	Cali	forni	ia						Charles Carlot Control of the Contro	
Earth City			ea:								Aı	nalv	sis I	Parijastad				Preservation Co	des:
Sumple 10 No. 12 Sample 10 No. 12 Sample 10 No. 12 Sample 10 No. 12		TAT Requested (d	ays):			100								loquested	T T	TT	50		
314-296-8757(Fax) PO F. PO F. PO																		C - Zn Acetate D - Nitric Acid	O - AsNaO2 P - Na2O4S
Project Proj	314-298-8566(Tel) 314-298-8757(Fax)	PO #:				7		ım-137	nium	_								F - MeOH G - Amchlor	R - Na2S2O3
Outfall009_20181207_Comp (440-226822-1MS) 1277/18 90.00	5.003005	WO #:				or No	(0)	d Cesiu	al Uran	na/Beta	9							I - Ice	T - TSP Dodecahydrate U - Acetone
Outfall009_20181207_Comp (440-226822-1MS) 1277/18 90.00						(Yes	or	0 and	1 Tot	Alpi	m-22	1-228	tium				ners	K - EDTA	W - pH 4-5
Outfall/09_20181207_Comp (440-226822-1MS) 12/7/18 90.00 90.90 09.00 12/7/18 90.90 09.90 12/7/18 90.90 Pacific MS Water X X X X X X X X X X X X X X X X X X X						mple	(Yes	0		Gross	Radiu	adium	nsp Tri				contai		Z - other (specify)
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Outfall009_20181207_Comp (440-226822-1MSD) 12/7/18 93-00 Pacific MSD Water X X X X X X X X X X X X X X X X X X X		12/7/18	09:00	MS	Water	1			Х	x	X	х	x			+	2	Boeing SSFL; DO	NOT FILTER; use prep
Note: Since laboratory accreditations are subject to change. TestAmerica Laboratories, inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/fleets/matrix being analyzed, the samples must be shipped back to the "testAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories. Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not Laboratories, line, attention immediately. If all requested accreditation status should be brought to TestAmerica Laboratories. Inc. **Dessible Hazard Identification** **Unconfirmed** **Dessible Hazard Identification** **Unconfirmed** **Deliverable Requested: I, II, III, IV, Other (specify)* **Primary Deliverable Rank: 2* **Special Instructions/QC Requirements:* **Empty Kit Refinoplished by: **Date:** **Time:** **Method of Shipment:* **Date/Time:** **Date/Time:** **Date/Time:** **Company*	Outfall009_20181207_Comp (440-226822-1MSD)	12/7/18	09:00	MSD	Water				х	х	х	х	х				2	Boeing SSFL; DO	NOT FILTER; use prep
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by: Relinquished by: Date/Time: Date/Time: Date/Time: Date/Time: Custody Seal No.: Possible Hazard Identification Unconfirmed Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return To Client Disposal By Lab Archive For Months Special Instructions/QC Requirements: Time: Method of Shipment: Company Received by: Date/Time: Company Company Received by: Date/Time: Company Custody Seal No.:						\perp	Ц												
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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-226822-3

Login Number: 226822 List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Societisioni, Tim		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc. Job Number: 440-226822-3

List Source: TestAmerica St. Louis
List Number: 2
List Creation: 12/11/18 03:43 PM

Creator: Dupart, Lacee S

Creator: Dupart, Lacee S		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ba Carrier	
Lab Sample ID	Client Sample ID	(40-110)	
440-226822-1	Outfall009_20181207_Comp	49.9	
440-226822-1 MS	Outfall009_20181207_Comp	45.4	
440-226822-1 MSD	Outfall009_20181207_Comp	43.1	
LCS 160-405504/1-A	Lab Control Sample	63.4	
MB 160-405504/20-A	Method Blank	51.3	
Tracer/Carrier Legen	d		
Ba Carrier = Ba Carrie	r		

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ba Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-226822-1	Outfall009_20181207_Comp	74.9	80.7	
440-226822-1 MS	Outfall009_20181207_Comp	70.2	71.4	
440-226822-1 MSD	Outfall009_20181207_Comp	72.0	80.7	
LCS 160-405521/1-A	Lab Control Sample	90.6	76.3	
MB 160-405521/20-A	Method Blank	90.0	81.9	
Tracer/Carrier Legend	d			
Ba Carrier = Ba Carrier	r			
Y Carrier = Y Carrier				

Method: 905 - Strontium-90 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Sr Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-226822-1	Outfall009_20181207_Comp	72.7	89.7	
440-226822-1 MS	Outfall009_20181207_Comp	79.7	93.1	
440-226822-1 MSD	Outfall009_20181207_Comp	72.0	93.8	
LCS 160-405485/1-A	Lab Control Sample	86.5	91.6	
MB 160-405485/17-A	Method Blank	87.5	93.1	
Tracer/Carrier Legend	i			
Sr Carrier = Sr Carrier				
Y Carrier = Y Carrier				

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water Prep Type: Total/NA

			Percent	Yield (Acceptance	Limits)
		ranium-23			
Lab Sample ID	Client Sample ID	(30-110)			
440-226822-1	Outfall009_20181207_Comp	60.9			
440-226822-1 MS	Outfall009_20181207_Comp	40.8			
440-226822-1 MSD	Outfall009_20181207_Comp	30.3			

TestAmerica Irvine

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A F

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

TestAmerica Job ID: 440-226822-3

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		ranium-23	
Lab Sample ID	Client Sample ID	(30-110)	
LCS 160-405494/2-A	Lab Control Sample	84.0	<u> </u>
MB 160-405494/1-A	Method Blank	87.7	

Tracer/Carrier Legend

Uranium-232 = Uranium-232

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Sacramento

Sample Receiving Notes



Job:__

b: 440-226822

n the lob tolder with the COC.	al, Cooler Custody Seal, Temperature & corrected Temperature & c	J.1101 C		Culoti
n the job folder with the COC. Notes:	Therm. ID: AK-2 / AK-3 (AK-5) AK-6 / HA Cooler Custody Seal: Sample Custody Seal: Cooler ID: Temp: Observed Corrected From: Temp Blank D Sample	Other	r	
	NCM Filed: Yes □ No			
		Yes	No	NA
	Perchlorate has headspace?			Ø
	Alkalinity has no headspace?			Ø
	CoC is complete w/o discrepancies?	Ø		
	Samples received within holding time?	Ø		
	Sample preservatives verified?			Dr.
	Cooler compromised/tampered with?		Ø	
	Samples compromised/tampered with?		P	
	Samples w/o discrepancies?	Ø		
	Sample containers have legible labels?	D		
	Containers are not broken or leaking?	P		
	Sample date/times are provided.	Ø		
	Appropriate containers are used?	P		
	Sample bottles are completely filled?	Ø		
	Zero headspace?*			Ø
	Multiphasic samples are not present?	戶		
	Sample temp OK?	Ø	D	
	Sample out of temp?		Ø	

WVVB

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-226534-1

Prepared for

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

9 January 2019





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		V.3.1. Method Blanks)
		V.3.2. Interference Check Samples:)
		V.3.3. Laboratory Control Samples)
		V.3.4. Laboratory Duplicates:)
		V.3.5. Matrix Spike/Matrix Spike Duplicate)
	V.4.	Serial Dilution)
	V.5.	Internal Standards Performance)
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		V.7.1. Field Blanks and Equipment Blanks)
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TABLES

- 1 Sample Identification
- 2 Data Qualifier Reference
- 3 Reason Code Reference



INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003D.01 002

Sample Delivery Group: 440-226534-1

Project Manager: Katherine Miller

Matrix: Water QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0 **Laboratory:** TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo_Simi_20181206 _Grab	440-226534-1	N/A	Water	12/06/2018 12:35 AM	E608, E525.2 SM2340





II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-226534-1:

- The laboratories received the sample in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the original COC, and transfer COCs were signed by personnel from both laboratories.
- According to the Login Sample Receipt Checklist, custody seals were absent on the cooler upon receipt at TA-Irvine; however, no evidence of tampering was noted.
- Method 608, for low level PCBs, was subcontracted to Eurofins Lancaster Laboratories Env LLC. Method 525.2, for diazinon and chlorpyrifos, was subcontracted to Weck Laboratories, Inc.
- The Receipt Documentation log from Eurofins noted the shipping container was sealed; however, custody seals were absent.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason							
Code	Organic 	Inorganic					
Н	Holding time was exceeded.	Holding time was exceeded.					
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.					
С	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r²) was <0.990.	Correlation coefficient (r) was <0.995.					
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.					
В	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.					
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.					
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.					
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.					
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.					
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.					
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.					
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.					
А	Not applicable.	Serial dilution %D was outside control limits.					
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.					
Т	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.					



Reason Code	Organic	Inorganic			
+	False positive – reported compound was not present.	False positive – reported compound w not present.			
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.			
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.			
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.			
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.			
?	TIC identity or reported retention time has been changed.	Not applicable.			
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.			
Р	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.			
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.			
*11, *111	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.			



III. METHOD ANALYSES – 608 PESTICIDES AND PCBS

L. Calvin of MEC^X reviewed the SDG on January 15, 2019

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^{X} Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1), EPA Method 608, and the National Functional Guidelines for Superfund Organic Methods Data Review (2017).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

III.2. CALIBRATION

The pesticide initial calibration %RSDs were \leq 10% or $r^2 \geq$ 0.990 on both analytical columns. The average %RSD of the Aroclor 1016 initial calibration exceeded 10% (10.7%) on the primary analytical column and within the control limit on the secondary column; however, the laboratory also analyzed six-point initial calibrations for Aroclors 1248, 1254, and 1260 with acceptable %RSDs on both analytical columns. In the professional judgement of the reviewer, no qualifications were assigned. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of \leq 15%.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits, and RPDs for the PCB LCS/LCSD were within the control limit of ≤30%. Chlordane and toxaphene were not spiked in the pesticide LCS.

III.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 10-148%, respectively, in the site sample.

111.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on sample Arroyo_Simi_20181206_Grab of this SDG for pesticides. Recoveries and RPDs were within the laboratory control limits. Chlordane and toxaphene were not spiked in the MS/MSD. Method accuracy and precision for PCBs was evaluated based on the LCS/LCSD results.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no issues with target compound identification. The laboratory analyzed for six select pesticides and seven Aroclors by Method 608. Aroclors were not detected in the site sample. The intercolumn RPD of 17% for the 4,4'-DDE detect was within the control limit of $\leq 40\%$.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The detect below the RL for 4,4'-DDE was flagged as DNQ to comply with permit reporting. Reported nondetects are valid to the reporting limit.

III.7. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. EPA METHOD 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCS)

E. Wessling of MEC^X reviewed the SDG on January 18, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^{X} Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 525.2, and the National Functional Guidelines for Superfund Organic Methods Data Review (2017). The sample was validated at Level III.

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.

IV.2.GC/MS TUNING AND CALIBRATION

As the analyses were acquired in SIM mode, tuning was not applicable.

Calibration criteria were met. The initial calibration average RRFs were \geq 0.05 and %RSDs \leq 30% or $r^2 \geq$ 0.990. The continuing calibration RRFs were \geq 0.05 and recoveries were within the method QC limits of 70-130%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

IV.3.2. LABORATORY CONTROL SAMPLES

The recoveries were within the laboratory control limits of 37-169% for chlorpyrifos and 43-152% for diazinon.



IV.3.3. SURROGATE RECOVERY

Recoveries of both surrogates were within laboratory control limits of 76-128% for 1,3-dimethyl-2-nitrobenzene and 40-163% for triphenyl phosphate.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. Method accuracy was evaluated based upon LCS recoveries.

IV.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

The internal standard performance was not evaluated at Level III.

IV.6. COMPOUND IDENTIFICATION

Compound identification was not verified at Level III. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2.

IV.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was not verified at Level III. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit. The sample was analyzed at a 5× dilution prior to analysis due to potential matrix interference. The reporting limits and MDLs were adjusted accordingly.

IV.8. SYSTEM PERFORMANCE

System performance was not evaluated at Level III.

V. METHOD SM2340B — HARDNESS

M. Hilchey of MEC^x reviewed the SDG on January 9, 2019.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Method 200.7, Standard Methods for the Examination of Water and Wastewater 2340B, and the National Functional Guidelines for Inorganic Data Review (2014).

V.1. HOLDING TIMES



The analytical holding time, six months for metals, were met.

V.2. MS TUNING AND CALIBRATION

QAPP calibration criteria were met. A blank and three standards were used for calibration of ICP-AES. The initial calibration r values were ≥0.995. CRQL recoveries were within the laboratory control limits of 50-150%. Initial calibration verification recoveries were within QAPP control limits of 95-105%. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

There were no target analyte detections in the method blank and calibration blanks.

V.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES ICSAB recoveries were within the control limits of 80-120% or $\pm 2 \times$ the reporting limit, whichever is greater. As both target analytes were spiked for ICSA, interference was not evaluated.

V.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the QAPP control limits of 85-115%.

V.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG for ICP-AES. Results were not assessed when the parent sample concentration exceeded the spike amount by $4\times$. Recoveries and RPDs were within the QAPP control limits of 70-130% and \leq 20%, respectively, for all target analytes.

V.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

V.5. INTERNAL STANDARDS PERFORMANCE

Internal standard review is not applicable to this method.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations for ICP-AES and hardness were verified, and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

V.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:



V.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4402265341

Analysis Method E525.2M

Sample Name ARROYO SIMI 20181206 GRAB Matrix Type: WS Result Type: TRG

Sample Date: 12/6/2018 12:35:00 PM Validation Level: 8

Lab Sample Name: 440-226534-1

Analyte	Fractio	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2		50	34	ng/L	U, M-02	U	
Diazinon	N	333-41-5		50	26	ng/L	U, M-02	U	

Analysis Method E608

Sample Name ARROYO SIMI 20181206 GRAB Matrix Type: WS Result Type: TRG

Sample Date: 12/6/2018 12:35:00 PM Validation Level: 8

Lab Sample Name: 440-226534-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8		0.0052	0.0041	ug/L	U	U	
4,4'-DDE	N	72-55-9	0.0040	0.0052	0.0031	ug/L	J,DX	J	DNQ
4,4'-DDT	N	50-29-3		0.010	0.0041	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2		0.52	0.10	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2		0.52	0.10	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5		0.52	0.10	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9		0.52	0.10	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6		0.52	0.10	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1		0.52	0.10	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5		0.52	0.10	ug/L	U	U	
Chlordane	N	57-74-9		0.10	0.082	ug/L	U	U	
Dieldrin	N	60-57-1		0.0052	0.0021	ug/L	U	U	
Toxaphene	N	8001-35-2		0.52	0.10	ug/L	U	U	

Analysis Method SM2340

Sample Name ARROYO SIMI 20181206 GRAB Matrix Type: WS Result Type: TRG

Sample Date: 12/6/2018 12:35:00 PM Validation Level: 8

Lab Sample Name: 440-226534-1

Result Analyte Fraction: CAS No Result RLMDL Lab Validation Validation Value Units Qualifier Qualifier Notes Hardness as CaCO3 HARDNESSCA 0.33 0.17 mg/L

Monday, January 21, 2019 Page 1 of 1



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-226534-1

Client Project/Site: Quarterly Arroyo Simi-Frontier Park

Revision: 1

For:

Haley & Aldrich, Inc. 400 E Van Buren St. Suite 545 Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by: 1/3/2019 11:26:09 AM

Urvashi Patel, Manager of Project Management (949)261-1022

urvashi.patel@testamericainc.com

.....LINKS

Review your project results through **Total Access**

Have a Question?



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Ushi fatel

Urvashi Patel Manager of Project Management 1/3/2019 11:26:09 AM

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Sample Summary

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226534-1	Arroyo_Simi_20181206_Grab	Water	12/06/18 12:35	12/06/18 18:00

Case Narrative

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

Job ID: 440-226534-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-226534-1

Comments

Revision created to remove PCB from TA as PCB was reported from Sublab (Eurofins)

Receipt

The samples were received on 12/6/2018 6:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method 608_LL-PCB- Lancaster Labs: This method was subcontracted to Eurofins Lancaster Laboratories Env LLC. The subcontract laboratory certification is different from that of the facility issuing the final report.

Method Weck-525.2-Diazinon and Chlorpyrifos: This method was subcontracted to Weck Laboratories, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.

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Client Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

Client Sample ID: Arroyo_Simi_20181206_Grab

TestAmerica Job ID: 440-226534-1

Lab Sample ID: 440-226534-1

Matrix: Water

Date Collected: 12/06/18 12:35 Date Received: 12/06/18 18:00

Method: 608 - Organoch	Iorine Pesticides	in Water							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.082	ug/L		12/07/18 06:07	12/07/18 16:53	1
Dieldrin	ND		0.0052	0.0021	ug/L		12/07/18 06:07	12/07/18 16:53	1
Toxaphene	ND		0.52	0.26	ug/L		12/07/18 06:07	12/07/18 16:53	1
4,4'-DDD	ND		0.0052	0.0041	ug/L		12/07/18 06:07	12/07/18 16:53	1
4,4'-DDE	0.0040	J,DX	0.0052	0.0031	ug/L		12/07/18 06:07	12/07/18 16:53	1
4,4'-DDT	ND		0.010	0.0041	ug/L		12/07/18 06:07	12/07/18 16:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	53		10 - 150				12/07/18 06:07	12/07/18 16:53	1

Method: SM 2340B - Total Har	dness (as CaCO3) by ca	alculation -	Total Re	ecovera	able				
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Hardnose as CaCO3	72	0.33	0.17	ma/l			12/00/18 16:08		

Method Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

Method	Method Description	Protocol	Laboratory
608	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
Subcontract	608_LL-PCB- Lancaster Labs	None	SC0103
Subcontract	Weck-525.2-Diazinon and Chlorpyrifos	None	Weck Lab
608	Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

SC0103 = Eurofins Lancaster Laboratories Env LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300 TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

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Lab Chronicle

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

Lab Sample ID: 440-226534-1

Matrix: Water

Client Sample ID: Arroyo_Simi_20181206_Grab Date Collected: 12/06/18 12:35

Date Received: 12/06/18 18:00

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	608			970 mL	2 mL	515512	12/07/18 06:07	L1H	TAL IRV
Total/NA	Analysis	608		1			515629	12/07/18 16:53	D1D	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			514864	12/09/18 16:08	B1H	TAL IRV

Laboratory References:

SC0103 = Eurofins Lancaster Laboratories Env LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300 TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

TestAmerica Job ID: 440-226534-1

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

Method: 608 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-515512/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA Analysis Batch: 515629 **Prep Batch: 515512**

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		12/07/18 06:07	12/07/18 15:10	1
Dieldrin	ND		0.0050	0.0020	ug/L		12/07/18 06:07	12/07/18 15:10	1
Toxaphene	ND		0.50	0.25	ug/L		12/07/18 06:07	12/07/18 15:10	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		12/07/18 06:07	12/07/18 15:10	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		12/07/18 06:07	12/07/18 15:10	1
4,4'-DDT	ND		0.010	0.0040	ug/L		12/07/18 06:07	12/07/18 15:10	1
	MB	МВ							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	58		10 - 150				12/07/18 06:07	12/07/18 15:10	1

Lab Sample ID: LCS 440-515512/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA**

Analysis Batch: 515629 Prep Batch: 515512

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Dieldrin	0.250	0.191		ug/L		76	36 - 146	
4,4'-DDD	0.250	0.182		ug/L		73	31 - 141	
4,4'-DDE	0.250	0.189		ug/L		76	30 - 145	
4,4'-DDT	0.250	0.200		ug/L		80	25 - 150	

LCS LCS Limits Surrogate %Recovery Qualifier Tetrachloro-m-xylene 63 10 - 150

Lab Sample ID: 440-226534-1 MS Client Sample ID: Arroyo_Simi_20181206_Grab **Matrix: Water** Prep Type: Total/NA **Prep Batch: 515512** Analysis Batch: 515629

MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier **Analyte** Unit D %Rec Limits Dieldrin ND 0.262 0.221 ug/L 85 50 - 120 4,4'-DDD ND 0.262 0.214 ug/L 82 50 - 125 4,4'-DDE 0.0040 J,DX 0.262 0.212 ug/L 80 45 - 125 50 - 125

4,4'-DDT ND 0.262 0.221 84 ug/L MS MS Limits Surrogate %Recovery Qualifier 10 - 150 Tetrachloro-m-xylene 69

Lab Sample ID: 440-226534-1 MSD Client Sample ID: Arroyo_Simi_20181206_Grab **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 515629									Prep Ba	tch: 5	15512
-	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Dieldrin	ND		0.258	0.221		ug/L		86	50 - 120	0	30
4,4'-DDD	ND		0.258	0.220		ug/L		85	50 - 125	3	30
4,4'-DDE	0.0040	J,DX	0.258	0.211		ug/L		80	45 - 125	1	30
4.4'-DDT	ND		0.258	0.222		ug/L		86	50 - 125	0	30

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

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Method: 608 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: 440-226534-1 MSD

Matrix: Water

Tetrachloro-m-xylene

Analysis Batch: 515629

Client Sample ID: Arroyo_Simi_20181206_Grab Prep Type: Total/NA

Prep Batch: 515512

MSD MSD

Surrogate %Recovery Qualifier

68 Qualifier

10 - 150

Limits

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QC Association Summary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

GC Semi VOA

Prep Batch: 515512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226534-1	Arroyo_Simi_20181206_Grab	Total/NA	Water	608	
MB 440-515512/1-A	Method Blank	Total/NA	Water	608	
LCS 440-515512/2-A	Lab Control Sample	Total/NA	Water	608	
440-226534-1 MS	Arroyo_Simi_20181206_Grab	Total/NA	Water	608	
440-226534-1 MSD	Arroyo_Simi_20181206_Grab	Total/NA	Water	608	

Analysis Batch: 515629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226534-1	Arroyo_Simi_20181206_Grab	Total/NA	Water	608	515512
MB 440-515512/1-A	Method Blank	Total/NA	Water	608	515512
LCS 440-515512/2-A	Lab Control Sample	Total/NA	Water	608	515512
440-226534-1 MS	Arroyo_Simi_20181206_Grab	Total/NA	Water	608	515512
440-226534-1 MSD	Arroyo_Simi_20181206_Grab	Total/NA	Water	608	515512

Metals

Analysis Batch: 514864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226534-1	Arroyo_Simi_20181206_Grab	Total Recoverable	Water	SM 2340B	

Definitions/Glossary

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-226534-1

Qualifiers

GC Semi VOA

J,DX Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MDA Minimum Detectable Activity (Radiochemistry)
MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

PQL Practical Quantitation Limit

QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

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Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-226534-1

Project/Site: Quarterly Arroyo Simi-Frontier Park

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	ty Program		Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-19

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Certificate of Analysis

FINAL REPORT

Work Orders: 8L06141

12/26/2018 **Report Date:**

12/6/2018 **Received Date:**

1 workday **Turnaround Time:**

> (949) 261-1022 **Phones:**

(949) 260-3297 Fax:

P.O. #:

Billing Code:

Attn: Patty Mata

Project: 440-226534-1

Client: TestAmerica - Irvine CA

17461 Derian Ave, Suite 100

Irvine, CA 92614

Dear Patty Mata,

Enclosed are the results of analyses for samples received 12/06/18 with the Chain-of-Custody document. The samples were received in good condition, at 2.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results

Sample:	440-226534-1, Alias: Arroyo_Simi_20181206_Grab							Sampled: 12/06/18 12:35 by Neal Smith			
	8L06141-01 (Water)										
Analyte			Result	MDL	MRL	Units	Dil	Analyzed	Qualifier		
Method: EPA	. 525.2M	Batch ID: W8L0362	Instr: GCMS13		Prepared: 1	2/07/18 09:00		Analyst: EFC			
Chlorpyrifo	S		ND	34	50	ng/l	1	12/12/18 11:58	M-02		
Diazinon			ND	26	50	ng/l	1	12/12/18 11:58	M-02		
Surrogate(s) 1,3-Dimeth	nyl-2-nitrobenzene		83%		76-128	Conc: 20	180	12/12/18 11:58	M-02		
Triphenyl p	phosphate		128%		40-163	Conc: 32	200	12/12/18 11:58	M-02		

8L06141 Page 1 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634



Certificate of Analysis

1	Quality	Control	Results

					Spike	Source		%REC		RPD	
Analyte	Result	MDL	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifie
Blank (W8L0362-BLK1)					repared: 12/06/1	IQ Analyzod: 1	12/12/10				
Chlorpyrifos	ND	6.9	10	ng/l	repareu: 12/06/1	io Allalyzeu:	12/12/10				
Diazinon	· ND	5.2	10	ng/l							
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene			447	ng/l	500		89	76-128			
.,,				ng/l	500		93	40-163			
LCS (W8L0362-BS1)				Р	repared: 12/06/1	I8 Analyzed: 1	12/12/18				
Chlorpyrifos	57.0	6.9	10	ng/l	50.0		114	37-169			
Diazinon		5.2	10	ng/l	50.0		74	43-152			
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene			449	ng/l	500		90	76-128			
Triphenyl phosphate			528	ng/l	500		106	40-163			
Matrix Spike (W8L0362-MS1)	Source	8K23003-0	06	P	repared: 12/06/1	18 Analyzed: 1	12/12/18				
Chlorpyrifos	160	14	20	ng/l	100	ND	160	37-168			
Diazinon		10	20	ng/l	100	ND	211	36-153			MS-0
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene				ng/l	1000		88	76-128			
Triphenyl phosphate			1450	ng/l	1000		145	40-163			
Matrix Spike Dup (W8L0362-MSD1)	Source	8K23003-0	06	P	repared: 12/06/1	18 Analyzed: 1	12/12/18				
Chlorpyrifos	148	14	20	ng/l	100	ND	148	37-168	7	30	
Diazinon		10	20	ng/l	100	ND	176	36-153	18	30	MS-0
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene				ng/l	1000		95	76-128			
Triphenyl phosphate			1390	na/l	1000		139	40-163			

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Certificate of Analysis

FINAL REPORT

Notes and Definitions

ltem	Definition
M-02	Due to the nature of matrix interferences, sample was diluted prior to preparation. The MDL and MRL were raised due to the dilution.
MS-05	The spike recovery and/or RPD were outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis

ary	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit

MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence.
	The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)

	the mile is also them as Emilion a Quantum and (20 Q) and 2 steemen Emilion (speciming (
MDA	Minimum Detectable Activity
NR	Not Reportable

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TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal
	standard. If the library search produces no matches at or above 85%, the compound is reported as unknown

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance. An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB) All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

Reviewed by:







Regina Giancola **Project Manager**

> ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must

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Page 3 of 3

Lancaster Laboratories Environmental







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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Prepared for:

Test America 17461 Derian Ave Suite #100 Irvine CA 92614

Report Date: December 19, 2018 14:13

Project: Quarterly Arroyo Simi-Frontier Park

Account #: 41440 Group Number: 2017375 SDG: SSF11 PO Number: 44009879 State of Sample Origin: CA

Electronic Copy To Test America Attn: Urvashi Patel

Respectfully Submitted,

Kay Howe

Kay Hower

(717) 556-7364

To view our laboratory's current scopes of accreditation please go to http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/. Historical copies may be requested through your project manager.

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Lancaster Laboratories Environmental







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SAMPLE INFORMATION

Client Sample Description	Sample Collection	ELLE#
	Date/Time	
Arroyo_Simi_20181206_Grab (440-226534-1) Water	12/06/2018 12:35	9934719

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

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Project Name:

Lancaster Laboratories Environmental

Analysis Report

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Arroyo_Simi_20181206_Grab (440-226534-1) Water **Sample Description:**

Quarterly Arroyo Simi-Frontier Park

Quarterly Arroyo Simi-Frontier Park

Test America

ELLE Sample #: WW 9934719

ELLE Group #:

2017375

Matrix: Water

Submittal Date/Time: 12/11/2018 12:40 Collection Date/Time: 12/06/2018 12:35 SDG#: SSF11-01

Method Limit of CAT Dilution **Detection Limit*** Quantitation **Analysis Name CAS Number** Result **Factor** No. **EPA 608** ug/l ug/l ug/l **PCBs** 06030 PCB-1016 12674-11-2 N.D. D1 0.10 0.52 06030 PCB-1221 11104-28-2 N.D. D1 0.10 0.52 06030 PCB-1232 11141-16-5 N.D. D1 0.10 0.52 06030 PCB-1242 53469-21-9 N.D. D1 0.10 0.52 06030 PCB-1248 12672-29-6 N.D. D1 0.10 0.52 06030 PCB-1254 11097-69-1 N.D. D1 0.10 0.52 06030 PCB-1260 11096-82-5 N.D. D1 0.15 0.52 06030 Total PCBs 1336-36-3 N.D. 0.10 0.52

The response for the decachlorobiphenyl surrogate in the ending calibration verification standard is outside the QC acceptance limits on D2. Since the surrogate recovery is within the acceptance limits, the data is reported.

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
06030	PCBs in Water by 608	EPA 608	1	183460019A	12/18/2018 02:26	Kirby B Turner	1		
11960	Method 608 PCB Water Ext.	EPA 608	1	183460019A	12/12/2018 17:11	Christine E Gleim	1		

^{*=}This limit was used in the evaluation of the final result

Analysis Report

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Quality Control Summary

Client Name: Test America Group Number: 2017375

Reported: 12/19/2018 14:13

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Result	MDL**	LOQ
ug/l	ug/l	ug/l
Sample num	ber(s): 9934719	
N.D.	0.10	0.50
N.D.	0.15	0.50
N.D.	0.10	0.50
	ug/I Sample numi N.D. N.D. N.D. N.D. N.D. N.D. N.D. N.D	ug/l ug/l Sample number(s): 9934719 N.D. N.D. 0.10 N.D. 0.10 N.D. 0.10 N.D. 0.10 N.D. 0.10 N.D. 0.10 N.D. 0.10 N.D. 0.10 N.D. 0.15

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 183460019A	Sample number	(s): 9934719							
PCB-1016	5.01	3.98	5.01	3.83	80	76	60-117	4	30
PCB-1260	5.00	4.37	5.00	4.37	87	87	57-134	0	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PCBs in Water by 608

Batch number: 183460019A

	Tetrachloro-m-xylene-D1	Decachlorobiphenyl-D1	Tetrachloro-m-xylene-D2	Decachlorobiphenyl-D2
9934719	81	78	86	102
Blank	73	45	76	54
LCS	44	91	44	111
LCSD	42	74	43	92
Limits:	33-137	10-148	33-137	10-148

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: Test America Group Number: 2017375 Reported: 12/19/2018 14:13

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Irvine, CA 92614-5817

<u>TestAmerica</u>

THE LEADER IN ENVIRONMENTAL TESTING

リリリリ ていつ3つ5	9934719
Chain of Custody Record	#
4 144 (1) (2) 13 / 3	1 1 1 1 1 1 1 1 1 1

Phone (949) 261-1022 Fax (949) 260-3297																			THE LEADER IN EN	IVIRONMENTAL TESTING
Client Information (Sub Contract Lab)	Sampler:						PM: tel, Urvashi							Carrier Tracking No(s):					COC No: 440-130592.1	
Dient Contact: Shipping/Receiving	Phone:							ashi.patel@testamericainc.com California											Page: Page 1 of 1	
Company: Eurofins Lancaster Laboratories Env LLC								Accreditations Required (See note): State Program - California											Job #: 440-226534-1	
ddress: 425 New Holland Pike,	Due Date Request 12/18/2018	ed:								Anal	vsis	Rec	ues	ed					Preservation Cod	
ity: .ancaster	TAT Requested (d	ays):					ė												A - HCL B - NaOH C - Zn Acetate	M - Hexane N - None O - AsNaO2 P - Na2O4S
tate, Zip: PA, 17601							11,												D - Nitric Acid E - NaHSO4	Q - Na2SO3
hone: 17-656-2300(Tel)	PO #:				7	2	s)/ 608												F - MeOH G - Amchlor H - Ascorbic Acid	R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate
nall:	WO#:		10		N JO	Q Q	r Lab											g	I - Ice J - DI Water	U - Acetone V - MCAA
oject Name: uarterly Arroyo Simi-Frontier Park	Project #: 44009879				- V	es or l	ncaste											ntaineı	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)
te:	ssow#:				Jamp	کا so (ا	B-La											of cor	Other:	
		Sample	Sample Type (C=comp,	Matri) (W=water, S=	Solid,	Perform MS/MSD (Yes or No)	B (608_LL-P(ncaster Labs	=										Total Number		
ample Identification - Client ID (Lab ID)	Sample Date	Time	G≕grab)	BT=Tissue, A		¥,	SU	2000										P	Special Ins	structions/Note:
rroyo_Simi_20181206 Grab (440-226534-1)	12/6/18	12:35	Fieserva	Water	- 7	Y	х									-		K		
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ote: Since laboratory accreditations are subject to change, TestAmerica I irrently maintain accreditation in the State of Origin listed above for analy aboratories, Inc. attention immediately. If all requested accreditations are	sis/tests/matrix being anal-	zed, the sam	oles must be s	hipped back	k to the	Test/	Americ	a labo	ratory	or other	instruc	ctions v	s. This vill be p	sample	shipm . Any	ent is f	forwar es to a	ded u	under chain-of-custody ditation status should t	y. If the laboratory does no be brought to TestAmerica
ossible Hazard Identification						Sai					may	_			•	les a	re re	tain	ed longer than 1	month)
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eliverable Requested: I, II, III, IV, Other (specify)	Primary Deliver					Ŀ	eciai i	nstru	ictions	s/QC F	(equi	reme								
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Δ Yes Δ No				Pagg e	2 2 o	f-97	<u> </u>							d,	0		I			Ver: 09/20/2016 (F

Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

235717

Group Number(s): 2017875

Client: TestAmerica

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

12/11/2018 12:40

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

No

Sample Date/Times match COC:

Yes

Samples Chilled:

Yes

VOA Vial Headspace ≥ 6mm:

Air Quality Samples Present:

N/A

Paperwork Enclosed:

Yes

Total Trip Blank Qty:

Samples Intact:

Yes

0

No

Missing Samples:

Extra Samples:

No

No

Discrepancy in Container Qty on COC:

No

Unpacked by Christopher Stief (12429) at 13:31 on 12/11/2018

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler # Thermometer ID 1

8013596-IR

Corrected Temp 2.0

Therm. Type IR

Ice Type Wet

Ice Present?

Ice Container Loose/Bag

Elevated Temp?

Ν

T | 717-656-2300 F | 717-656-2681 LancasterLabs.com /3/2019 (Rev. 1)

ppb

Dry weight basis

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	μg	microgram(s)
lb.	pound(s)	μL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm		• •	kilogram (mg/kg) or one gram per million grams. For grams per liter (mg/l), because one liter of water has a weight

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless

very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight

concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

Measurement uncertainty values, as applicable, are available upon request.

as-received basis.

otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



Data Qualifiers

Qualifier	Definition
С	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
Р	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised
	due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

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Client Name	e/Address.		·			Project:					ANALYS	IS REQUIR	ED	Field Readings Meter serial # V J OUV
San Diego,	Road Suite 220 CA 92108-5860			Qua	rterly Arro	-SSFL NPDE ermit 2015 byo Simi-Fro y Weather					4,4-DDT,	1000011		Field Readings: (Include units) Time of Readings: 12:25
	-3269								Recoverable (SM2340B)	2)	4,4-DDD, 4,4-DDE, 4,4-I PCBs only (E608)			PH
	rvices under this CoC shall be performed in accordance -18-TestAmerica by and between Haley & Aldrich, Inc.			1	•	ager: Katheri 6, 520 904 69			3, Recove	Diazinon (E525 2)	ne, 4,4-D() + PCBs			Field readings QC
Sampler: -D a N (m smith Bal Swith		· · · ·	i		ger: Mark Do 3, 818 599 07			ness as CaCO3,	Chlorpyrifos, Diazin	Pesticides: Chlordane, Dieldrin, Toxaphene +			Checked by: 18 Date/Time: 12:55 2/6/18
Sample Description	Sample i.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Hardness	Chlor	Pestu			Comments
Arroyo Sımlı	Arroyo_Simi_20181206_Grab	12.35	Ws Ws Ws	250 mL Poly 1L Glass Amber 1L Glass Amber	3 N	HNO ₃ HCI None	100 275 285	140 A	Х	х	Х			Extract within 24-Hours of sampling
	Arroyo Sens 20181209 Srab Extra	12/6/2018	- ws - ws	1L Glass Amber	2 2	HCI None	275 - 285	No		#-				Hold Hold
														440-226534 Chain of Custody
					-								-	
Refinquished B Refinquished B	Din 12.8	18/143	Compa	Hu by	A	drok	Received By	2	, , ,	Date/	6.1	8 14	3 <i>0</i>	Turn-around time (Check) 24 Hour. 72 Hour 10 Day X 48 Hour 5 Day Normal
Relinquished 8	724.18 y Date/Time		Compa	TA IRV			Received By	The state of the s	7A "	v Date/	Time	14	180	Sample Integrity (Check) Intact: On Ice Store samples for 6 months Data Requirements (Check) No Level IV
		una anta anta anta anta anta anta anta a							/	1	1	····		











Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-226534-1

Login Number: 226534 List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Creator: Aviia, Stephanie 1		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX F

Fourth Quarter 2018 Reasonable Potential Analysis Tables

Notes:

- 1. The following Reasonable Potential Analysis (RPA) provides the analytical results as performed by the procedures outlined in *Reasonable Potential Analysis Methodology Technical Memo* (MWH and Flow Science, 2006).
- 2. The monitoring data set utilized to conduct the RPA consists of all applicable and relevant data from the present reporting quarter.
- 3. As directed by the CTR and the Regional Water Control Board 2,3,7,8-TCDD (Dioxin) values are to be expressed in NPDES permitting and this RPA as TCDD Total Equivalence units (TEQs). A TCDD TEQ is determined by multiplying each of the seventeen dioxin and furan congeners by their respective toxicity equivalency factor (TEF) and bioaccumulation equivalency factor (BEF) then summing the results of those products. For the purposes of this RPA, the resulting TCDD TEQ does not include those congener concentrations that are reported as DNQ, as specified on Page 26, of the NPDES Permit Effective April 1, 2015 (Water Board, 2015).
- 4. Data reported with qualifiers (e.g., J [DNQ] or R) are considered estimated or rejected and are not used in this RPA.
- 5. All of the following abbreviations and/or notes may not occur on every table.
- 6. Based on ORDER NO. R4-2015-0033, page E-2, Section I.C, only pollutants which do not have a final effluent limitation in the NPDES permit are included in this RPA analysis.

Definition of Acronyms, Abbreviations, and Terminology Used

>=	Greater than or equal to
*	Freshwater aquatic life criteria for metals are expressed as a function of
	total hardness (mg/L) in the water body. The equations are provided in the
	CTR, (US EPA, 2011). Values displayed correspond to a total hardness of 100 mg/l.
μg/L	Concentration units, micrograms per liter
All Data Qualified	All available monitoring data are qualified and no statistical analysis is
7 III Data Qualifica	performed.
Annual	The 2015 NPDES Permit requires annual monitoring.
Available Data < DL	All available monitoring data that are not qualified are below detection
	limits.
В	Background
С	Concentration
CCC	Criterion Continuous Concentration
CMC	Criterion Maximum Concentration
CTR	California Toxics Rule
CV	Coefficient of Variation
DL	Detection Limit
EPA TSD	EPA's Technical Support Document for Water Quality Based Toxics
	Control, (see references).
Fibers/L	Units for asbestos concentration, fibers per liter
HH O	Human Health criteria for consumption of Organisms only

Definition of Acronyms, Abbreviations, and Terminology Used (Continued)

HH W&OMEC	Maximum Observed Effluent Concentration
mg/L	Concentration units, milligrams per liter
Min	Minimum
MPN/100ml	Most probable number per 100 milliliters
NA	Not Applicable
Narrative	Water quality criteria are expressed as a narrative objective rather than a numeric objective, and therefore are not part of the statistical RPA calculations.
None	No available CTR or Basin Plan criteria.
pH Dependent	CTR Criteria are based on pH.
Discharge	The 2015 NPDES Permit requires monitoring once per discharge event.
Qualified Data	Data qualifier definitions are: (a) J- The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL), (b) U/UJ- The analyte was not detected in the sample at the detection limit /estimated detection limit (EDL), (c) B - Analyte found in sample and associated blank, and (d) DNQ- Detected Not Quantified.
Reserved	EPA has reserved the CTR criteria.
RPA	Reasonable Potential Analysis
SIP	The State Water Resources Control Board "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," (see references).
Tot	Total

Priority Pollutant RPA Column Explanation

CTR	Provides CTR constituent reference number.
Constituent	Provides CTR constituent common name.
Units	Provides the data set's concentration units as referenced by 2015 NPDES
	Permit.
MEC	Provides the outfall monitoring group's maximum value from the applicable
	data set.
CV	Equal to the standard deviation divided by the average of the applicable
	data set. If the number of samples is less than 10, the CV is assumed to be
	0.6.
Step 1 identifies all application	able water quality criteria.
CTR Criteria	Concentration criteria as listed in the CTR.
CMC = Acute	The Freshwater CMC is listed as the acute concentration criterion.
CCC = Chronic	The Freshwater CCC is listed as the chronic concentration criterion.
HH W&O (Not App)	The HH W&O is deemed not applicable based on past Regional Board
	RPAs.
HH O = HH	The HH O is listed as the CTR human health concentration criterion.
Basin Plan Criteria	Applicable Basin Plan Criteria are listed for the Los Angeles River and/or
	Calleguas Creek watersheds.
C = Lowest Criteria	The comparison concentration (C) is equal to the lowest criterion for a
	constituent based on the CMC, CCC, HH O, and Basin Plan Criteria listed.
Step 2 defines the applica	ble data set.
Is Effluent Data	If all data is qualified, then NO. If not, then YES.
Available	·

Priority Pollutant RPA Column Explanation (Continued)

Step 3 determines the max	ximum observed effluent concentration.										
Was Constituent	If the constituent was detected, then YES. If all monitoring data are non-										
Detected in Effluent Data	detect or qualified then NO.										
Are all Detection Limits	If constituent was detected in effluent data then not applicable (NA). If										
>C	constituent was not detected and all analysis detection limits are greater										
	than the comparison concentration, then YES, if not then NO.										
If DL > C, MEC = Min	If the previous cell answer was yes, then the MEC is equal to the minimum										
(DL)	detection limit. If not, then NA.										
Step 4 compares the MEC	to the lowest applicable water quality criteria.										
MEC >= C	If the MEC is greater than or equal to the comparison concentration then										
	YES, if not then NO.										

Note: Steps 5 and 6 of the Priority Pollutant RPA do not apply to the Santa Susana Site because the Regional Board gives no consideration for receiving water background constituent concentrations. Furthermore, Boeing defers the application of best professional judgment in Step 7 and final determination of reasonable potential in Step 8 to the Regional Board Staff.

Non-priority Pollutant RPA Column Explanation

Constituent	Provides the Non-Priority Pollutant constituent common name
Monitoring	Provides the 2015 NPDES Permit directed monitoring frequency
Units	Provides the data set's concentration units
Number of Samples	Provides the number of available samples that are not qualified
MEC	Provides the outfall monitoring group's maximum value from the applicable
	data set
CV	Equal to the standard deviation divided by the average of the applicable
	data set. If the number of samples is less than 10, the CV is assumed to be
	0.6.
Multiplier	Utilizes the EPA's TSD calculation to determine multiplier for which the
	maximum effluent concentration is calculated. (MWH and Flow Science,
	2006, or EPA TSD, 1991)
Projected Maximum	Utilizes the product of the multiplier and the MEC as an estimate for the
Effluent Concentration	projected maximum effluent concentration.
Dilution Ratio	The Regional Board allocates no dilution ratio to the Santa Susana Site
	(NA).
Background	The Regional Board allocates no background concentration to the Santa
Concentration	Susana Site (NA).
Projected Maximum	The Regional Board estimates the projected maximum receiving water
Receiving Water	concentration as equal to the projected maximum effluent concentration.
Concentration	
Step 1, Determine Water	The water quality objective is based on appropriate Basin Plan criteria as
Quality Objectives	noted in the Reasonable Potential Analysis Methodology Technical Memo.
BU – Beneficial Use	This is the Regional Board's Basis for determining if reasonable potential
Protection, NC – Human	should be evaluated for a non-priority pollutant.
Non-carcinogen, AP-	
Aquatic Life Protection,	
TMDL – Total Maximum	
Daily Load	

Note: Boeing has completed appropriate statistical calculations but defers the application of best professional judgment and the final determination of reasonable potential to the Regional Board Staff.

References:

- 1. Los Angeles Regional Water Quality Control Board, "Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, (Basin Plan)." June 13, 1994.
- 2. MWH and Flow Science, "Reasonable Potential Analysis Methodology Technical Memo- Version 1, Final, Santa Susan Field Laboratory, Ventura County, California." April 28, 2006.
- 3. State Water Resources Control Board, "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, (SIP)" Resolution No. 2005-0019, February 24, 2005.
- 4. US EPA, 40CFR part 131, Water Quality Standards; Establishment of numeric Criteria for Priority Toxic Pollutants for the State of California, (CTR) Federal Registry, 2011, pp. 496 507.
- 5. US EPA, "Technical Support Document for Water Quality-based Toxics Control." EPA/505/2-90-001, PB-91-127415, March 1991.

TABLE F-1 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011, AND 018)

						Step	1: Water Quality Crit	eria, Determin	ne C		Step 2	1	Step 3		Step 4
						CTR CRI	TERIA				Is Effluent	Was Constituent	Are all		
					Fresh	ıwater	Human He	alth	Basin Plan	C = Lowest	Data	Detected in	Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн		Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
1, 2, 11, 18	15 Asbestos	Fibers/L	Not Analyzed	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7,000,000	No	NA	NA	NA	NA
1, 2, 11, 18	17 Acrolein	μg/L	Annual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
1, 2, 11, 18	18 Acrylonitrile	μg/L	Annual	0.6	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA
1, 2, 11, 18	19 Benzene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>1.2</td><td>71</td><td>1</td><td>1</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	1.2	71	1	1	Yes	No	No	NA	No
1, 2, 11, 18	20 Bromoform	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>4.3</td><td>360</td><td>NONE</td><td>360</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	4.3	360	NONE	360	Yes	No	No	NA	No
1, 2, 11, 18	21 Carbon Tetrachloride	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.25</td><td>4.4</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	22 Chlorobenzene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>680</td><td>21,000</td><td>70</td><td>70</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	680	21,000	70	70	Yes	No	No	NA	No
1, 2, 11, 18	23 Dibromochloromethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.401</td><td>34</td><td>NONE</td><td>34</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.401	34	NONE	34	Yes	No	No	NA	No
1, 2, 11, 18	24 Chloroethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	25 2-Chloroethyl vinyl ether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	26 Chloroform (Trichloromethane)	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>Reserved</td><td>Reserved</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	27 Chlorodibromomethane	μg/L	Annual	0.6	NONE	NONE	0.56	46	NONE	46	No	NA	NA	NA	NA
1, 2, 11, 18	28 1,1-Dichloroethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
1, 2, 11, 18	31 1,2-Dichloropropane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.52</td><td>39</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.52	39	5	5	Yes	No	No	NA	No
1, 2, 11, 18	32 cis-1,3-Dichloropropene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>10</td><td>1,700</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	32a trans-1,3-Dichloropropene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>10</td><td>1,700</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	33 Ethylbenzene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>3,100</td><td>29,000</td><td>700</td><td>700</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	3,100	29,000	700	700	Yes	No	No	NA	No
1, 2, 11, 18	34 Bromomethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>48</td><td>4,000</td><td>NONE</td><td>4,000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	48	4,000	NONE	4,000	Yes	No	No	NA	No
1, 2, 11, 18	35 Chloromethane (Methyl Chloride)	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>Narrative</td><td>Narrative</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	36 Methylene chloride	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>4.7</td><td>1,600</td><td>NONE</td><td>1,600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	4.7	1,600	NONE	1,600	Yes	No	No	NA	No
1, 2, 11, 18	37 1,1,2,2-Tetrachloroethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.17</td><td>11</td><td>1</td><td>1</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.17	11	1	1	Yes	No	No	NA	No
1, 2, 11, 18	38 Tetrachloroethene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.8</td><td>8.85</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.8	8.85	5	5	Yes	No	No	NA	No
1, 2, 11, 18	39 Toluene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>6,800</td><td>200,000</td><td>150</td><td>150</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	6,800	200,000	150	150	Yes	No	No	NA	No
1, 2, 11, 18	40 trans-1,2-Dichloroethene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>700</td><td>140,000</td><td>10</td><td>10</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	700	140,000	10	10	Yes	No	No	NA	No
1, 2, 11, 18	41 1,1,1-Trichloroethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>Narrative</td><td>Narrative</td><td>200</td><td>200</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
1, 2, 11, 18	42 1,1,2-Trichloroethane	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.60</td><td>42</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.60	42	5	5	Yes	No	No	NA	No
1, 2, 11, 18	44 Vinyl chloride	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>2</td><td>525</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	45 2-Chlorophenol	μg/L	Annual	0.6	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA
1, 2, 11, 18	46 2,4-Dichlorophenol	μg/L	Annual	0.6	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA
1, 2, 11, 18	47 2,4-Dimethylphenol	μg/L	Annual	0.6	NONE	NONE	540	2,300	NONE	2,300	No	NA	NA	NA	NA
1, 2, 11, 18	48 2-Methyl-4,6-dinitrophenol	μg/L	Annual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA
1, 2, 11, 18	49 2,4-Dinitrophenol	μg/L	Annual	0.6	NONE	NONE	70	14,000	NONE	14,000	No	NA	NA	NA	NA
1, 2, 11, 18	50 2-Nitrophenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	51 4-Nitrophenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	52 4-Chloro-3-methylphenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	54 Phenol	μg/L	Annual	0.6	NONE	NONE	21,000	4,600,000	NONE	4,600,000	No	NA	NA	NA	NA
1, 2, 11, 18	56 Acenaphthene	μg/L	Annual	0.6	NONE	NONE	1,200	2,700	NONE	2,700	No	NA	NA	NA	NA
1, 2, 11, 18	57 Acenaphthylene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	58 Anthracene	μg/L	Annual	0.6	NONE	NONE	9,600	110,000	NONE	110,000	No	NA	NA	NA	NA
1, 2, 11, 18	59 Benzidine	μg/L	Annual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
1, 2, 11, 18	60 Benzo(a)Anthracene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	61 Benzo(a)Pyrene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	62 Benzo(b)Fluoranthene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA

TABLE F-1 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011, AND 018)

						Step	1: Water Quality Crit	eria, Determin	ne C		Step 2		Step 3		Step 4
						CTR CRI	TERIA				ls Effluent	Was Constituent	Are all		
					Frest	nwater	Human He	alth	Basin Plan	C = Lowest	Data	Detected in	Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн		Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
1, 2, 11, 18	63 Benzo(g,h,i)Perylene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	64 Benzo(k)Fluoranthene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	65 Bis (2-Chloroethoxy) methane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	66 Bis (2-Chloroethyl) ether	μg/L	Annual	0.6	NONE	NONE	0.0310	1.4	NONE	1.4	No	NA	NA	NA	NA
1, 2, 11, 18	67 Bis (2-Chloroisopropyl) Ether	μg/L	Annual	0.6	NONE	NONE	1,400	170,000	NONE	170,000	No	NA	NA	NA	NA
1, 2, 11, 18	69 4-Bromophenyl phenyl ether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	70 Butyl benzylphthalate	μg/L	Annual	0.6	NONE	NONE	3,000	5,200	NONE	5,200	No	NA	NA	NA	NA
1, 2, 11, 18	71 2-Chloronaphthalene	μg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	No	NA	NA	NA	NA
1, 2, 11, 18	72 4-Chlorophenyl phenyl ether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	73 Chrysene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	74 Dibenz(a,h)anthracene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	75 1,2-Dichlorobenzene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>2,700</td><td>17,000</td><td>600</td><td>600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	2,700	17,000	600	600	Yes	No	No	NA	No
1, 2, 11, 18	76 1,3-Dichlorobenzene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>400</td><td>2,600</td><td>NONE</td><td>2,600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	400	2,600	NONE	2,600	Yes	No	No	NA	No
1, 2, 11, 18	77 1,4-Dichlorobenzene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>400</td><td>2,600</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	400	2,600	5	5	Yes	No	No	NA	No
1, 2, 11, 18	78 3,3'-Dichlorobenzidine	μg/L	Annual	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
1, 2, 11, 18	79 Diethyl phthalate	μg/L	Annual	0.6	NONE	NONE	23,000	120,000	NONE	120,000	No	NA	NA	NA	NA
1, 2, 11, 18	80 Dimethyl phthalate	μg/L	Annual	0.6	NONE	NONE	313,000	2,900,000	NONE	2,900,000	No	NA	NA	NA	NA
1, 2, 11, 18	81 Di-n-butyl phthalate	μg/L	Annual	0.6	NONE	NONE	2,700	12,000	NONE	12,000	No	NA	NA	NA	NA
1, 2, 11, 18	83 2,6-Dinitrotoluene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	84 Di-n-octyl phthalate	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	85 1,2-Diphenylhydrazine/Azobenzene	μg/L	Annual	0.6	NONE	NONE	0.040	0.54	NONE	0.54	No	NA	NA	NA	NA
1, 2, 11, 18	86 Fluoranthene	μg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
1, 2, 11, 18	87 Fluorene	μg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14,000	No	NA	NA	NA	NA
1, 2, 11, 18	88 Hexachlorobenzene	μg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
1, 2, 11, 18	89 Hexachlorobutadiene	μg/L	Annual	0.6	NONE	NONE	0.44	50	NONE	50	No	NA	NA	NA	NA
1, 2, 11, 18	90 Hexachlorocyclopentadiene	μg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA	NA	NA	NA
1, 2, 11, 18	91 Hexachloroethane	μg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA	NA	NA	NA
1, 2, 11, 18	92 Indeno(1,2,3-cd)Pyrene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18	93 Isophorone	μg/L	Annual	0.6	NONE	NONE	8.4	600	NONE	600	No	NA	NA	NA	NA
1, 2, 11, 18	94 Naphthalene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	95 Nitrobenzene	μg/L	Annual	0.6	NONE	NONE	17	1,900	NONE	1,900	No	NA	NA	NA	NA
1, 2, 11, 18	97 n-Nitroso-di-n-propylamine	μg/L	Annual	0.6	NONE	NONE	0.005	1.4	NONE	1.4	No	NA	NA	NA	NA
1, 2, 11, 18	98 N-Nitrosodiphenylamine	μg/L	Annual	0.6	NONE	NONE	5.0	16	NONE	16	No	NA	NA	NA	NA
1, 2, 11, 18	99 Phenanthrene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	100 Pyrene	μg/L	Annual	0.6	NONE	NONE	960	11,000	NONE	11,000	No	NA	NA	NA	NA
1, 2, 11, 18	101 1,2,4-Trichlorobenzene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA	NA	NA	NA
1, 2, 11, 18	102 Aldrin	μg/L	Annual	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	No	NA	NA	NA	NA
1, 2, 11, 18	104 beta-BHC	μg/L	Annual	0.6	NONE	NONE	0.014	0.046	NONE	0.046	No	NA	NA	NA	NA
1, 2, 11, 18	105 gamma-BHC (Lindane)	μg/L	Annual	0.6	0.95	NONE	0.019	0.063	0.2	0.063	No	NA	NA	NA	NA
1, 2, 11, 18	106 delta-BHC	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	107 Chlordane	μg/L	Available Data <dl< td=""><td>0.6</td><td>2.4</td><td>0.0043</td><td>0.00057</td><td>0.00059</td><td>0.1</td><td>0.00059</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00059</td><td>No</td></dl<>	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	No
1, 2, 11, 18	108 4,4'-DDT	μg/L	Available Data <dl< td=""><td>0.6</td><td>1.1</td><td>0.001</td><td>0.00059</td><td>0.00059</td><td>NONE</td><td>0.00059</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00059</td><td>No</td></dl<>	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
1, 2, 11, 18	109 4,4'-DDE	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.00059</td><td>0.00059</td><td>NONE</td><td>0.00059</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00059</td><td>No</td></dl<>	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No

TABLE F-1 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011, AND 018)

					Step 1: Water Quality Criteria, Determine C CTR CRITERIA						Step 2		Step 3		Step 4
						CTR CRI	TERIA				Is Effluent	Was Constituent	Are all		
					Fresh	water	Human Hea	alth	Basin Plan	C = Lowest	Data	Detected in	Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH		Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
1, 2, 11, 18	110 4,4'-DDD	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.00083</td><td>0.00084</td><td>NONE</td><td>0.00084</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00084</td><td>No</td></dl<>	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	No
1, 2, 11, 18	111 Dieldrin	μg/L	Available Data <dl< td=""><td>0.6</td><td>0.24</td><td>0.056</td><td>0.00014</td><td>0.00014</td><td>NONE</td><td>0.00014</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00014</td><td>No</td></dl<>	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
1, 2, 11, 18	112 alpha-Endosulfan	μg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
1, 2, 11, 18	113 beta-Endosulfan	μg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
1, 2, 11, 18	114 Endosulfan Sulfate	μg/L	Annual	0.6	NONE	NONE	110	240	NONE	240	No	NA	NA	NA	NA
1, 2, 11, 18	115 Endrin	μg/L	Annual	0.6	0.086	0.036	0.76	0.81	2	0.036	No	NA	NA	NA	NA
1, 2, 11, 18	116 Endrin Aldehyde	μg/L	Annual	0.6	NONE	NONE	0.76	0.81	NONE	0.81	No	NA	NA	NA	NA
1, 2, 11, 18	117 Heptachlor	μg/L	Annual	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	No	NA	NA	NA	NA
1, 2, 11, 18	118 Heptachlor Epoxide	μg/L	Annual	0.6	0.52	0.0038	0.00010	0.00011	0.01	0.00011	No	NA	NA	NA	NA
1, 2, 11, 18	119 Aroclor 1016	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	120 Aroclor 1221	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	121 Aroclor 1232	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	122 Aroclor 1242	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	123 Aroclor 1248	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	124 Aroclor 1254	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	125 Aroclor 1260	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	126 Toxaphene	μg/L	Available Data <dl< td=""><td>0.6</td><td>0.73</td><td>0.0002</td><td>0.00073</td><td>0.00075</td><td>3</td><td>0.0002</td><td>Yes</td><td>No</td><td>Yes</td><td>0.0002</td><td>No</td></dl<>	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	No
1, 2, 11, 18	127 E. Coli	MPN/100ml	Annual	0.6	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA

TABLE F-2 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)

						Step	1: Water Quality Crit	eria, Determin	ne C		Step 2		Step 3		Step 4
						CTR CRI	TERIA				Is Effluent	Was Constituent	Are all		
					Frest	nwater	Human He	alth	Basin Plan	C = Lowest	Data	Detected in	Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH		Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
3-7, 9, 10	2 Arsenic	μg/L	Annual	0.6	340	150	NONE	NONE	50	50	No	NA	NA	NA	NA
3-7, 9, 10	3 Beryllium	μg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	4	4	No	NA	NA	NA	NA
3-7, 9, 10	5a Chromium	μg/L	Annual	0.6	550	180	Narrative	Narrative	50	50	No	NA	NA	NA	NA
3-7, 9, 10	5b Chromium VI (Hexavalent)	μg/L	Annual	0.6	16	11	Narrative	Narrative	NONE	11	No	NA	NA	NA	NA
3-7, 9, 10	10 Selenium	μg/L	All Data Qualified	0.6	Reserved	5	Narrative	Narrative	50	5	No	No	No	NA	No
3-7, 9, 10	11 Silver	μg/L	Available Data < DL	0.6	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
3-7, 9, 10	15 Asbestos	Fibers/L	Annual	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7000000	No	NA	NA	NA	NA
3-7, 9, 10	17 Acrolein	μg/L	Annual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
3-7, 9, 10	18 Acrylonitrile	μg/L	Annual	0.6	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA
3-7, 9, 10	19 Benzene	μg/L	Annual	0.6	NONE	NONE	1.2	71	1	1	No	NA	NA	NA	NA
3-7, 9, 10	20 Bromoform	μg/L	Annual	0.6	NONE	NONE	4.3	360	NONE	360	No	NA	NA	NA	NA
3-7, 9, 10	21 Carbon Tetrachloride	μg/L	Annual	0.6	NONE	NONE	0.25	4.4	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	22 Chlorobenzene	μg/L	Annual	0.6	NONE	NONE	680	21,000	70	70	No	NA	NA	NA	NA
3-7, 9, 10	23 Dibromochloromethane	μg/L	Annual	0.6	NONE	NONE	0.401	34	NONE	34	No	NA	NA	NA	NA
3-7, 9, 10	24 Chloroethane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	25 2-Chloroethyl vinyl ether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	26 Chloroform	μg/L	Annual	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	27 Chlorodibromomethane	μg/L	Annual	0.6	NONE	NONE	0.56	46	NONE	46	No	NA	NA	NA	NA
3-7, 9, 10	28 1,1-Dichloroethane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	5	5	No	NA	NA	NA	NA
3-7, 9, 10	29 1,2-Dichloroethane	μg/L	Annual	0.6	NONE	NONE	0.38	99	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	30 1,1-Dichloroethene	μg/L	Annual	0.6	NONE	NONE	0.057	3.2	6	3.2	No	NA	NA	NA	NA
3-7, 9, 10	31 1,2-Dichloropropane	μg/L	Annual	0.6	NONE	NONE	0.52	39	5	5	No	NA	NA	NA	NA
3-7, 9, 10	32 cis-1,3-Dichloropropene	μg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	32a trans-1,3-Dichloropropene	μg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	33 Ethylbenzene	μg/L	Annual	0.6	NONE	NONE	3,100	29,000	700	700	No	NA	NA	NA	NA
3-7, 9, 10	34 Bromomethane	μg/L	Annual	0.6	NONE	NONE	48	4,000	NONE	4000	No	NA	NA	NA	NA
3-7, 9, 10	35 Chloromethane (Methyl Chloride)	μg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	36 Methylene chloride	μg/L	Annual	0.6	NONE	NONE	4.7	1,600	NONE	1600	No	NA	NA	NA	NA
3-7, 9, 10	37 1,1,2,2-Tetrachloroethane	μg/L	Annual	0.6	NONE	NONE	0.17	11	1	1	No	NA	NA	NA	NA
3-7, 9, 10	38 Tetrachloroethene	μg/L	Annual	0.6	NONE	NONE	0.8	8.85	5	5	No	NA	NA	NA	NA
3-7, 9, 10	39 Toluene	μg/L	Annual	0.6	NONE	NONE	6,800	200,000	150	150	No	NA	NA	NA	NA
3-7, 9, 10	40 trans-1,2-Dichloroethene	μg/L	Annual	0.6	NONE	NONE	700	140,000	10	10	No	NA	NA	NA	NA
3-7, 9, 10	41 1,1,1-Trichloroethane	μg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	200	200	No	NA	NA	NA	NA
3-7, 9, 10	42 1,1,2-Trichloroethane	μg/L	Annual	0.6	NONE	NONE	0.6	42	5	5	No	NA	NA	NA	NA
3-7, 9, 10	43 Trichloroethene	μg/L	Annual	0.6	NONE	NONE	2.7	81	5	5	No	NA	NA	NA	NA
3-7, 9, 10	44 Vinyl chloride	μg/L	Annual	0.6	NONE	NONE	2	525	0.5	0.5	No	NA	NA	NA	NA
3-7, 9, 10	45 2-Chlorophenol	μg/L	Annual	0.6	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA
3-7, 9, 10	46 2,4-Dichlorophenol	μg/L	Annual	0.6	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA
3-7, 9, 10	47 2,4-Dimethylphenol	μg/L	Annual	0.6	NONE	NONE	540	2,300	NONE	2300	No	NA	NA	NA	NA
3-7, 9, 10	48 2-Methyl-4,6-dinitrophenol	μg/L	Annual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA
3-7, 9, 10	49 2,4-Dinitrophenol	μg/L	Annual	0.6	NONE	NONE	70	14,000	NONE	14000	No	NA	NA	NA	NA
3-7, 9, 10	50 2-Nitrophenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	51 4-Nitrophenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
- , -,		. 5. –	1		1	1	1				1				

TABLE F-2 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)

						Step	1: Water Quality Crit	eria, Determin	e C		Step 2	1	Step 3		Step 4
						CTR CRI	TERIA				Is Effluent	Was Constituent	Are all		
					Frest	nwater	Human He	alth	Basin Plan	C = Lowest	Data	Detected in	Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн		Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
3-7, 9, 10	52 4-Chloro-3-methylphenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	53 Pentachlorophenol	μg/L	Annual	0.6	pH dependent	pH dependent	0.28	8.2	1	1	No	NA	NA	NA	NA
3-7, 9, 10	54 Phenol	μg/L	Annual	0.6	NONE	NONE	21,000	4,600,000	NONE	4600000	No	NA	NA	NA	NA
3-7, 9, 10	55 2,4,6-Trichlorophenol	μg/L	Annual	0.6	NONE	NONE	2.1	6.5	NONE	6.5	No	NA	NA	NA	NA
3-7, 9, 10	56 Acenaphthene	μg/L	Annual	0.6	NONE	NONE	1,200	2,700	NONE	2700	No	NA	NA	NA	NA
3-7, 9, 10	57 Acenaphthylene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	58 Anthracene	μg/L	Annual	0.6	NONE	NONE	9,600	110,000	NONE	110000	No	NA	NA	NA	NA
3-7, 9, 10	59 Benzidine	μg/L	Annual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
3-7, 9, 10	60 Benzo(a)Anthracene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	61 Benzo(a)Pyrene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA
3-7, 9, 10	62 Benzo(b)Fluoranthene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	63 Benzo(g,h,i)Perylene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	64 Benzo(k)Fluoranthene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	65 Bis (2-Chloroethoxy) methane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	66 Bis (2-Chloroethyl) ether	μg/L	Annual	0.6	NONE	NONE	0.031	1.4	NONE	1.4	No	NA	NA	NA	NA
3-7, 9, 10	67 Bis (2-Chloroisopropyl) Ether	μg/L	Annual	0.6	NONE	NONE	1,400	170,000	NONE	170000	No	NA	NA	NA	NA
3-7, 9, 10	68 Bis (2-ethylhexyl) Phthalate	μg/L	Annual	0.6	NONE	NONE	1.8	5.9	4	4	No	NA	NA	NA	NA
3-7, 9, 10	69 4-Bromophenyl phenyl ether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	70 Butyl benzylphthalate	μg/L	Annual	0.6	NONE	NONE	3,000	5,200	NONE	5200	No	NA	NA	NA	NA
3-7, 9, 10	71 2-Chloronaphthalene	μg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4300	No	NA	NA	NA	NA
3-7, 9, 10	72 4-Chlorophenyl phenyl ether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	73 Chrysene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	74 Dibenz(a,h)anthracene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	75 1,2-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	2,700	17,000	600	600	No	NA	NA	NA	NA
3-7, 9, 10	76 1,3-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	400	2,600	NONE	2600	No	NA	NA	NA	NA
3-7, 9, 10	77 1,4-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	400	2,600	5	5	No	NA	NA	NA	NA
3-7, 9, 10	78 3,3'-Dichlorobenzidine	μg/L	Annual	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
3-7, 9, 10	79 Diethyl phthalate	μg/L	Annual	0.6	NONE	NONE	23,000	120,000	NONE	120000	No	NA	NA	NA	NA
3-7, 9, 10	80 Dimethyl phthalate	μg/L	Annual	0.6	NONE	NONE	313,000	2,900,000	NONE	2900000	No	NA	NA	NA	NA
3-7, 9, 10	81 Di-n-butyl phthalate	μg/L	Annual	0.6	NONE	NONE	2,700	12,000	NONE	12000	No	NA	NA	NA	NA
3-7, 9, 10	82 2,4-Dinitrotoluene	μg/L	Annual	0.6	NONE	NONE	0.11	9.1	NONE	9.1	No	NA	NA	NA	NA
3-7, 9, 10	83 2,6-Dinitrotoluene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	84 Di-n-octyl phthalate	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	85 1,2-Diphenylhydrazine/Azobenzene	μg/L	Annual	0.6	NONE	NONE	0.04	0.54	NONE	0.54	No	NA	NA	NA	NA
3-7, 9, 10	86 Fluoranthene	μg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
3-7, 9, 10	87 Fluorene	μg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14000	No	NA	NA	NA	NA
3-7, 9, 10	88 Hexachlorobenzene	μg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
3-7, 9, 10	89 Hexachlorobutadiene	μg/L	Annual	0.6	NONE	NONE	0.44	50	NONE	50	No	NA	NA	NA	NA
3-7, 9, 10	90 Hexachlorocyclopentadiene	μg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA	NA	NA	NA
3-7, 9, 10	91 Hexachloroethane	μg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA	NA	NA	NA
3-7, 9, 10	92 Indeno(1,2,3-cd)Pyrene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
3-7, 9, 10	93 Isophorone	μg/L	Annual	0.6	NONE	NONE	8.4	600	NONE	600	No	NA	NA	NA	NA
3-7, 9, 10	94 Naphthalene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA

TABLE F-2 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)

							Step	1: Water Quality Crit	eria, Determin	ne C		Step 2		Step 3		Step 4
							CTR CRI					-				
						Frest	nwater	Human He	alth	Basin Plan	C = Lowest	Is Effluent Data	Was Constituent Detected in	Are all Detection Limits	If DL > C,	MEC >= C
Outfall	CTR	Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Dasiii i laii	Criteria	Available	Effluent Data	> C	MEC = Min (DL)	MEO > - O
3-7, 9, 10	95	Nitrobenzene	μg/L	Annual	0.6	NONE	NONE	17	1,900	NONE	1900	No	NA	NA	NA	NA
3-7, 9, 10	96	N-Nitrosodimethylamine	μg/L	Annual	0.6	NONE	NONE	0.00069	8.1	NONE	8.1	No	NA	NA	NA	NA
3-7, 9, 10	97	n-Nitroso-di-n-propylamine	μg/L	Annual	0.6	NONE	NONE	0.005	1.4	NONE	1.4	No	NA	NA	NA	NA
3-7, 9, 10	98	N-Nitrosodiphenylamine	μg/L	Annual	0.6	NONE	NONE	5	16	NONE	16	No	NA	NA	NA	NA
3-7, 9, 10	99	Phenanthrene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	100	Pyrene	μg/L	Annual	0.6	NONE	NONE	960	11,000	NONE	11000	No	NA	NA	NA	NA
3-7, 9, 10	101	1,2,4-Trichlorobenzene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA	NA	NA	NA
3-7, 9, 10	102	Aldrin	μg/L	Annual	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	No	NA	NA	NA	NA
3-7, 9, 10	103	alpha-BHC	μg/L	Annual	0.6	NONE	NONE	0.0039	0.013	NONE	0.013	No	NA	NA	NA	NA
3-7, 9, 10	104	beta-BHC	μg/L	Annual	0.6	NONE	NONE	0.014	0.046	NONE	0.046	No	NA	NA	NA	NA
3-7, 9, 10	105	gamma-BHC (Lindane)	μg/L	Annual	0.6	0.95	NONE	0.019	0.063	0.2	0.063	No	NA	NA	NA	NA
3-7, 9, 10	106	delta-BHC	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
3-7, 9, 10	107	Chlordane	μg/L	Annual	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	No	NA	NA	NA	NA
3-7, 9, 10	108	4,4'-DDT	μg/L	Annual	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
3-7, 9, 10	109	4,4'-DDE	μg/L	Annual	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
3-7, 9, 10	110	4,4'-DDD	μg/L	Annual	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	No	NA	NA	NA	NA
3-7, 9, 10	111	Dieldrin	μg/L	Annual	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	No	NA	NA	NA	NA
3-7, 9, 10	112	alpha-Endosulfan	μg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
3-7, 9, 10	113	beta-Endosulfan	μg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
3-7, 9, 10	114	Endosulfan Sulfate	μg/L	Annual	0.6	NONE	NONE	110	240	NONE	240	No	NA	NA	NA	NA
3-7, 9, 10	115	Endrin	μg/L	Annual	0.6	0.086	0.036	0.76	0.81	2	0.036	No	NA	NA	NA	NA
3-7, 9, 10	116	Endrin Aldehyde	μg/L	Annual	0.6	NONE	NONE	0.76	0.81	NONE	0.81	No	NA	NA	NA	NA
3-7, 9, 10	117	Heptachlor	μg/L	Annual	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	No	NA	NA	NA	NA
3-7, 9, 10	118	Heptachlor Epoxide	μg/L	Annual	0.6	0.52	0.0038	0.0001	0.00011	0.01	0.00011	No	NA	NA	NA	NA
3-7, 9, 10	119	Aroclor 1016	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	120	Aroclor 1221	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	121	Aroclor 1232	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	122	Aroclor 1242	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	123	Aroclor 1248	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	124	Aroclor 1254	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	125	Aroclor 1260	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
3-7, 9, 10	126	Toxaphene	μg/L	Annual	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	No	NA	NA	NA	NA
3-7, 9, 10	127	E. Coli	MPN/100ml	Annual	0.6	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA

TABLE F-3 REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALLS 003-007,009, AND 010)

Outfall	Constituent	Monitoring	Units	Number of Samples	MEC	cv	Multiplier	Projected Maximum Effluent Concentration (99/99)	Dilution Ratio	Background Concentration	Projected Maximum Receiving Water Concentration	Step 1, Determine Water Quality Objectives	BU - Beneficial use protection NC-Human noncarcinogen AP-Aquatic life protection TMDL-Total Maximum Daily Load
3-7, 9, 10	Total Suspended Solids	Annual	mg/L	1	14.0	0.6	13.20	184.76	NA	NA	184.76	45	BU

TABLE F-3 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

						Step	1: Water Quality Crit	eria, Determir	ne C		Step 2		Step 3		Step 4
						CTR CRI	TERIA		Basin Blan		la Effluent	Man Camatitusent	Ave ell		
					Fres	hwater	Human He	alth	Basin Plan	C = Lowest	Is Effluent Data	Was Constituent Detected in	Are all Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Title 22 GWR	Criteria	Available	Effluent Data	> C	MEC = Min (DL)	20
8	002 Arsenic	μg/L	13	0.60	340	150	NONE	NONE	50	50	Yes	Yes	NA	NA	No
8	003 Beryllium	μg/L	All Data Qualified	0.60	NONE	NONE	Narrative	Narrative	4	4	No	No	No	NA	No
8	005a Chromium	μg/L	10	0.60	550	180	Narrative	Narrative	50	50	Yes	Yes	NA	NA	No
8	005b Chromium VI	μg/L	Available Data <dl< td=""><td>0.60</td><td>16</td><td>11</td><td>Narrative</td><td>Narrative</td><td>NONE</td><td>11</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	16	11	Narrative	Narrative	NONE	11	Yes	No	No	NA	No
8	011 Silver	μg/L	Available Data <dl< td=""><td>0.60</td><td>3.4</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>3.4</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
8	015 Asbestos	Fibers/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>7,000,000</td><td>NONE</td><td>7,000,000</td><td>7000000</td><td>Yes</td><td>Yes</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	7,000,000	NONE	7,000,000	7000000	Yes	Yes	No	NA	No
8	017 Acrolein	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>320</td><td>780</td><td>NONE</td><td>780</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	320	780	NONE	780	Yes	No	No	NA	No
8	018 Acrylonitrile	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.059</td><td>0.66</td><td>NONE</td><td>0.66</td><td>Yes</td><td>No</td><td>Yes</td><td>0.66</td><td>No</td></dl<>	0.60	NONE	NONE	0.059	0.66	NONE	0.66	Yes	No	Yes	0.66	No
8	019 Benzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1.2</td><td>71</td><td>1</td><td>1</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1.2	71	1	1	Yes	No	No	NA	No
8	020 Bromoform	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>4.3</td><td>360</td><td>NONE</td><td>360</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	4.3	360	NONE	360	Yes	No	No	NA	No
8	021 Carbon Tetrachloride	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.25</td><td>4.4</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	No	NA	No
8	022 Chlorobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>680</td><td>21,000</td><td>70</td><td>70</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	680	21,000	70	70	Yes	No	No	NA	No
8	023 Dibromochloromethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.401</td><td>34</td><td>NONE</td><td>34</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.401	34	NONE	34	Yes	No	No	NA	No
8	024 Chloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	025 2-Chloroethylvinylether	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	026 Chloroform	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>Reserved</td><td>Reserved</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
8	027 Bromodichloromethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.56</td><td>46</td><td>NONE</td><td>46</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.56	46	NONE	46	Yes	No	No	NA	No
8	028 1,1-Dichloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
8	029 1,2-Dichloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.38</td><td>99</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.38	99	0.5	0.5	Yes	No	No	NA	No
8	030 1,1-Dichloroethene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.057</td><td>3.2</td><td>6</td><td>3.2</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.057	3.2	6	3.2	Yes	No	No	NA	No
8	031 1,2-Dichloropropane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.52</td><td>39</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.52	39	5	5	Yes	No	No	NA	No
8	032 cis-1,3-Dichloropropene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>10</td><td>1,700</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
8	032a trans-1,3-Dichloropropene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>10</td><td>1,700</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
8	033 Ethylbenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>3,100</td><td>29,000</td><td>700</td><td>700</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	3,100	29,000	700	700	Yes	No	No	NA	No
8	034 Bromomethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>48</td><td>4,000</td><td>NONE</td><td>4000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	48	4,000	NONE	4000	Yes	No	No	NA	No
8	035 Chloromethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>Narrative</td><td>Narrative</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
8	036 Methylene chloride	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>4.7</td><td>1,600</td><td>NONE</td><td>1600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	4.7	1,600	NONE	1600	Yes	No	No	NA	No
8	037 1,1,2,2-Tetrachloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.17</td><td>11</td><td>1</td><td>1</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.17	11	1	1	Yes	No	No	NA	No
8	038 Tetrachloroethene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.8</td><td>8.85</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.8	8.85	5	5	Yes	No	No	NA	No
8	039 Toluene	μg/L	All Data Qualified	0.60	NONE	NONE	6,800	200,000	150	150	No	No	No	NA	No
8	040 trans-1,2-Dichloroethene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>700</td><td>140,000</td><td>10</td><td>10</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	700	140,000	10	10	Yes	No	No	NA	No
8	041 1,1,1-Trichloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>Narrative</td><td>Narrative</td><td>200</td><td>200</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
8	042 1,1,2-trichloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.6</td><td>42</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.6	42	5	5	Yes	No	No	NA	No
8	043 Trichloroethene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>2.7</td><td>81</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	2.7	81	5	5	Yes	No	No	NA	No
8	044 Vinyl chloride	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>2</td><td>525</td><td>0.5</td><td>0.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA	No
8	045 2-chlorophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>120</td><td>400</td><td>NONE</td><td>400</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	120	400	NONE	400	Yes	No	No	NA	No
8	046 2,4-Dichlorophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>93</td><td>790</td><td>NONE</td><td>790</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	93	790	NONE	790	Yes	No	No	NA	No
8	047 2,4-dimethylphenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>540</td><td>2,300</td><td>NONE</td><td>2300</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	540	2,300	NONE	2300	Yes	No	No	NA	No
8	048 2-Methyl-4,6-dinitrophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>13.4</td><td>765</td><td>NONE</td><td>765</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	13.4	765	NONE	765	Yes	No	No	NA	No
8	049 2,4-dinitrophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>70</td><td>14,000</td><td>NONE</td><td>14000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	70	14,000	NONE	14000	Yes	No	No	NA	No
8	050 2-nitrophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	051 4-nitrophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	052 4-Chloro-3-methylphenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No

TABLE F-3 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

							Step	1: Water Quality Crit	eria, Determir	ne C		Step 2		Step 3		Step 4
							CTR CRI	TERIA		Basin Plan		Is Effluent	Was Constituent	Are all		
						Fresi	hwater	Human He	alth	basin Pian	C = Lowest	Data	Detected in	Detection Limits	If DL > C,	MEC >= C
Outfall	CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR	Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
8	053	Pentachlorophenol	μg/L	Available Data <dl< th=""><th>0.60</th><th>pH dependent</th><th>pH dependent</th><th>0.28</th><th>8.2</th><th>1</th><th>1</th><th>Yes</th><th>No</th><th>No</th><th>NA</th><th>No</th></dl<>	0.60	pH dependent	pH dependent	0.28	8.2	1	1	Yes	No	No	NA	No
8	054	Phenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>21,000</td><td>4,600,000</td><td>NONE</td><td>4600000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	21,000	4,600,000	NONE	4600000	Yes	No	No	NA	No
8	055	2,4,6-Trichlorophenol	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>2.1</td><td>6.5</td><td>NONE</td><td>6.5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	2.1	6.5	NONE	6.5	Yes	No	No	NA	No
8	056	Acenaphthene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1,200</td><td>2,700</td><td>NONE</td><td>2700</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1,200	2,700	NONE	2700	Yes	No	No	NA	No
8	057	Acenaphthylene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	058	Anthracene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>9,600</td><td>110,000</td><td>NONE</td><td>110000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	9,600	110,000	NONE	110000	Yes	No	No	NA	No
8	059	Benzidine	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.00012</td><td>0.00054</td><td>NONE</td><td>0.00054</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00054</td><td>No</td></dl<>	0.60	NONE	NONE	0.00012	0.00054	NONE	0.00054	Yes	No	Yes	0.00054	No
8	060	Benzo(a)Anthracene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>NONE</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
8	061	Benzo(a)Pyrene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>0.2</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	0.2	0.049	Yes	No	Yes	0.049	No
8	062	Benzo(b)Fluoranthene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>NONE</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
8	063	Benzo(g,h,i)Perylene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	064	Benzo(k)Fluoranthene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>NONE</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
8	065	Bis(2-Chloroethoxy) methane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	066	bis (2-Chloroethyl) ether	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.031</td><td>1.4</td><td>NONE</td><td>1.4</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.031	1.4	NONE	1.4	Yes	No	No	NA	No
8	067	Bis(2-Chloroisopropyl) Ether	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1,400</td><td>170,000</td><td>NONE</td><td>170000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1,400	170,000	NONE	170000	Yes	No	No	NA	No
8	068	bis (2-ethylhexyl) Phthalate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1.8</td><td>5.9</td><td>4</td><td>4</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1.8	5.9	4	4	Yes	No	No	NA	No
8	069	4-Bromophenylphenylether	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	070	Butylbenzylphthalate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>3,000</td><td>5,200</td><td>NONE</td><td>5200</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	3,000	5,200	NONE	5200	Yes	No	No	NA	No
8	071	2-Chloronaphthalene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1,700</td><td>4,300</td><td>NONE</td><td>4300</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1,700	4,300	NONE	4300	Yes	No	No	NA	No
8	072	4-Chlorophenylphenylether	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	073	Chrysene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>NONE</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
8	074	Dibenzo(a,h)Anthracene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>NONE</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
8	075	1,2-Dichlorobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>2,700</td><td>17,000</td><td>600</td><td>600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	2,700	17,000	600	600	Yes	No	No	NA	No
8	076	1,3-Dichlorobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>400</td><td>2,600</td><td>NONE</td><td>2600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	400	2,600	NONE	2600	Yes	No	No	NA	No
8	077	1,4-Dichlorobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>400</td><td>2,600</td><td>5</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	400	2,600	5	5	Yes	No	No	NA	No
8	078	3,3'-Dichlorobenzidine	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.04</td><td>0.077</td><td>NONE</td><td>0.077</td><td>Yes</td><td>No</td><td>Yes</td><td>0.077</td><td>No</td></dl<>	0.60	NONE	NONE	0.04	0.077	NONE	0.077	Yes	No	Yes	0.077	No
8	079	Diethylphthalate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>23,000</td><td>120,000</td><td>NONE</td><td>120000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	23,000	120,000	NONE	120000	Yes	No	No	NA	No
8	080	Dimethylphthalate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>313,000</td><td>2,900,000</td><td>NONE</td><td>2900000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	313,000	2,900,000	NONE	2900000	Yes	No	No	NA	No
8	081	Di-n-butylphthalate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>2,700</td><td>12,000</td><td>NONE</td><td>12000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	2,700	12,000	NONE	12000	Yes	No	No	NA	No
8	082	2,4-Dinitrotoluene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.11</td><td>9.1</td><td>NONE</td><td>9.1</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.11	9.1	NONE	9.1	Yes	No	No	NA	No
8	083	2,6-Dinitrotoluene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	084	Di-n-octylphthalate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	085	1,2-Diphenylhydrazine	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.04</td><td>0.54</td><td>NONE</td><td>0.54</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.04	0.54	NONE	0.54	Yes	No	No	NA	No
8	086	Fluoranthene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>300</td><td>370</td><td>NONE</td><td>370</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	300	370	NONE	370	Yes	No	No	NA	No
8	087	Fluorene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1,300</td><td>14,000</td><td>NONE</td><td>14000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1,300	14,000	NONE	14000	Yes	No	No	NA	No
8	088	Hexachlorobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.00075</td><td>0.00077</td><td>1</td><td>0.00077</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00077</td><td>No</td></dl<>	0.60	NONE	NONE	0.00075	0.00077	1	0.00077	Yes	No	Yes	0.00077	No
8	089	Hexachlorobutadiene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.44</td><td>50</td><td>NONE</td><td>50</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.44	50	NONE	50	Yes	No	No	NA	No
8	090	Hexachlorocyclopentadiene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>240</td><td>17,000</td><td>50</td><td>50</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	240	17,000	50	50	Yes	No	No	NA	No
8	091	Hexachloroethane	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>1.9</td><td>8.9</td><td>NONE</td><td>8.9</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	1.9	8.9	NONE	8.9	Yes	No	No	NA	No
8	092	Indeno(1,2,3-cd)Pyrene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0044</td><td>0.049</td><td>NONE</td><td>0.049</td><td>Yes</td><td>No</td><td>Yes</td><td>0.049</td><td>No</td></dl<>	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
8	093	Isophorone	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>8.4</td><td>600</td><td>NONE</td><td>600</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	8.4	600	NONE	600	Yes	No	No	NA	No
8	094	Naphthalene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	095	Nitrobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>17</td><td>1,900</td><td>NONE</td><td>1900</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	17	1,900	NONE	1900	Yes	No	No	NA	No

TABLE F-3 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

						Step	1: Water Quality Crit	eria, Determin	ne C		Step 2		Step 3		Step 4
						CTR CRI	TERIA		Danim Diam		In Ffficent	Man Constituent	A II		
					Fresi	hwater	Human He	alth	Basin Plan	C = Lowest	Is Effluent Data	Was Constituent Detected in	Are all Detection Limits	If DL > C,	MEC >= C
Outfall	CTR Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Title 22 GWR	Criteria	Available	Effluent Data	> C	MEC = Min (DL)	
8	096 N-Nitrosodimethylamine	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.00069</td><td>8.1</td><td>NONE</td><td>8.1</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.00069	8.1	NONE	8.1	Yes	No	No	NA	No
8	097 n-Nitroso-di-n-propylamine	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.005</td><td>1.4</td><td>NONE</td><td>1.4</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.005	1.4	NONE	1.4	Yes	No	No	NA	No
8	098 N-Nitrosodiphenylamine	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>5</td><td>16</td><td>NONE</td><td>16</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	5	16	NONE	16	Yes	No	No	NA	No
8	099 Phenanthrene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	100 Pyrene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>960</td><td>11,000</td><td>NONE</td><td>11000</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	960	11,000	NONE	11000	Yes	No	No	NA	No
8	101 1,2,4-Trichlorobenzene	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>70</td><td>70</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	70	70	Yes	No	No	NA	No
8	102 Aldrin	μg/L	Available Data <dl< td=""><td>0.60</td><td>3</td><td>NONE</td><td>0.00013</td><td>0.00014</td><td>NONE</td><td>0.00014</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00014</td><td>No</td></dl<>	0.60	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
8	103 alpha-BHC	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.0039</td><td>0.013</td><td>NONE</td><td>0.013</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.0039	0.013	NONE	0.013	Yes	No	No	NA	No
8	104 beta-BHC	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.014</td><td>0.046</td><td>NONE</td><td>0.046</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	No	NA	No
8	105 Lindane (gamma-BHC)	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.95</td><td>NONE</td><td>0.019</td><td>0.063</td><td>0.2</td><td>0.063</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	No	NA	No
8	106 delta-BHC	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
8	107 Chlordane	μg/L	Available Data <dl< td=""><td>0.60</td><td>2.4</td><td>0.0043</td><td>0.00057</td><td>0.00059</td><td>0.1</td><td>0.00059</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00059</td><td>No</td></dl<>	0.60	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	No
8	108 4,4'-DDT	μg/L	Available Data <dl< td=""><td>0.60</td><td>1.1</td><td>0.001</td><td>0.00059</td><td>0.00059</td><td>NONE</td><td>0.00059</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00059</td><td>No</td></dl<>	0.60	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
8	109 4,4'-DDE	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.00059</td><td>0.00059</td><td>NONE</td><td>0.00059</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00059</td><td>No</td></dl<>	0.60	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
8	110 4,4'-DDD	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.00083</td><td>0.00084</td><td>NONE</td><td>0.00084</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00084</td><td>No</td></dl<>	0.60	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	No
8	111 Dieldrin	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.24</td><td>0.056</td><td>0.00014</td><td>0.00014</td><td>NONE</td><td>0.00014</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00014</td><td>No</td></dl<>	0.60	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
8	112 Endosulfan I	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.22</td><td>0.056</td><td>110</td><td>240</td><td>NONE</td><td>0.056</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
8	113 Endosulfan II	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.22</td><td>0.056</td><td>110</td><td>240</td><td>NONE</td><td>0.056</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
8	114 Endosulfan Sulfate	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>110</td><td>240</td><td>NONE</td><td>240</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	110	240	NONE	240	Yes	No	No	NA	No
8	115 Endrin	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.086</td><td>0.036</td><td>0.76</td><td>0.81</td><td>2</td><td>0.036</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	0.086	0.036	0.76	0.81	2	0.036	Yes	No	No	NA	No
8	116 Endrin Aldehyde	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>NONE</td><td>0.76</td><td>0.81</td><td>NONE</td><td>0.81</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.60	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	No	NA	No
8	117 Heptachlor	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.52</td><td>0.0038</td><td>0.00021</td><td>0.00021</td><td>0.01</td><td>0.00021</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00021</td><td>No</td></dl<>	0.60	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	Yes	0.00021	No
8	118 Heptachlor Epoxide	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.52</td><td>0.0038</td><td>0.0001</td><td>0.00011</td><td>0.01</td><td>0.00011</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00011</td><td>No</td></dl<>	0.60	0.52	0.0038	0.0001	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	No
8	119 Aroclor-1016	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	120 Aroclor-1221	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	121 Aroclor-1232	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	122 Aroclor-1242	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	123 Aroclor-1248	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	124 Aroclor-1254	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	125 Aroclor-1260	μg/L	Available Data <dl< td=""><td>0.60</td><td>NONE</td><td>0.014</td><td>0.00017</td><td>0.00017</td><td>0.5</td><td>0.00017</td><td>Yes</td><td>No</td><td>Yes</td><td>0.00017</td><td>No</td></dl<>	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
8	126 Toxaphene	μg/L	Available Data <dl< td=""><td>0.60</td><td>0.73</td><td>0.0002</td><td>0.00073</td><td>0.00075</td><td>3</td><td>0.0002</td><td>Yes</td><td>No</td><td>Yes</td><td>0.0002</td><td>No</td></dl<>	0.60	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	No
8	127 E. Coli	MPN/100ml	8500	0.60	NA	NA	NA	NA	235	235	Yes	Yes	NA	NA	Yes

TABLE F-6 REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALL 008)

(Outfall	Constituent	Monitoring	Units	Number of Samples	MEC	с٧	Multiplier	Projected Maximum Effluent Concentration (99/99)	Dilution Ratio	Background Concentration	Projected Maximum Receiving Water Concentration	Step 1, Determine Water Quality Objectives	BU - Beneficial use protection NC-Human noncarcinogen AP-Aquatic life protection
	8	Total Suspended Solids	Annual	mg/L	1	750	0.60	13.2	9900.00	0	0	9900.00	45	BU